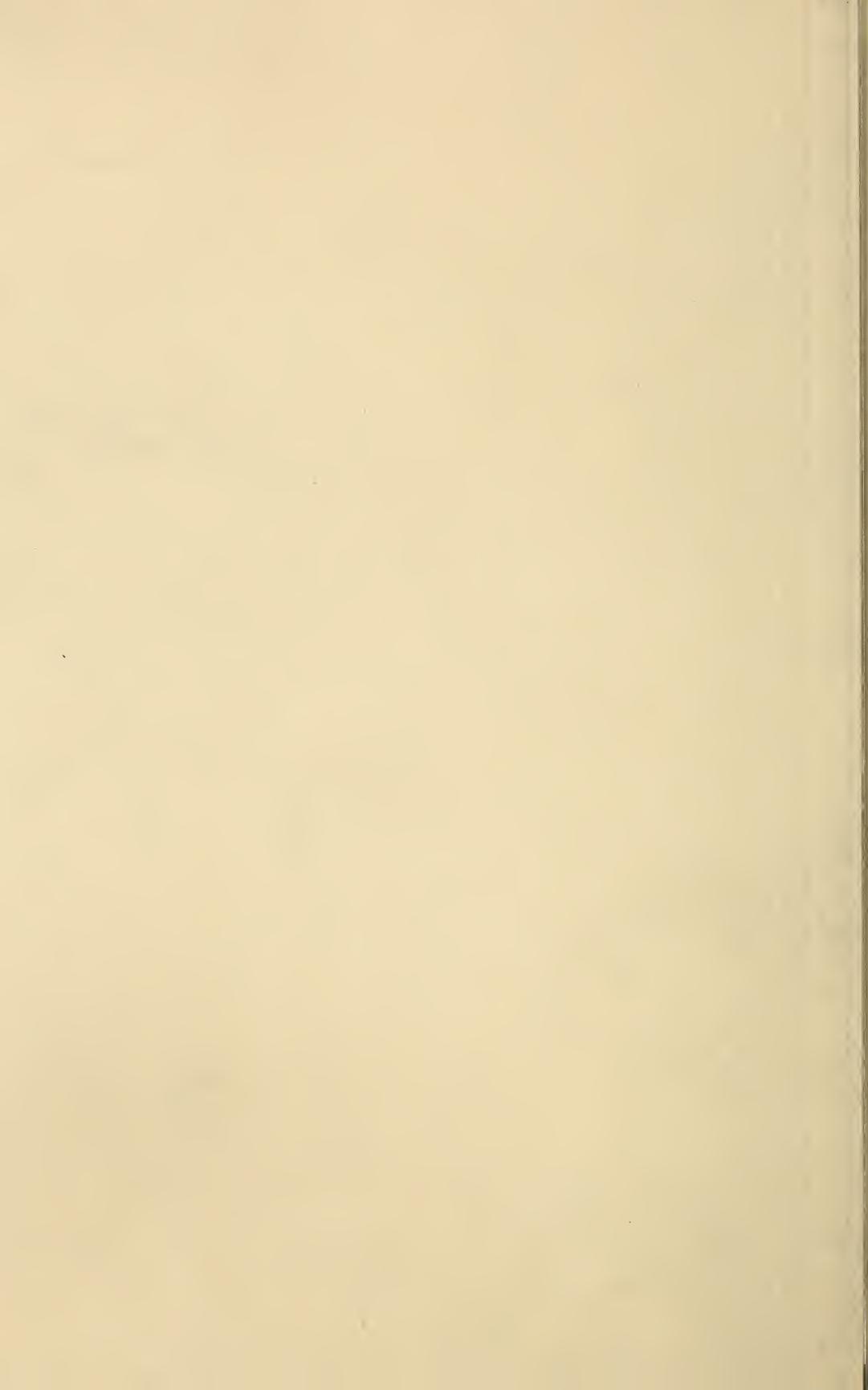


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GLEANINGS IN BEE CULTURE

APRIL, 1918

EDITORIAL

THE MEETING of the National Beekeepers' Association at Burlington, Ia., on Feb. 19-21,


**The Future
of the
National
Beekeepers'
Association.**

which has now gone into history, did good work in the selection of new officers, men being chosen that we believe will be live wires. The new president, David Running of Filion, Mich., is one of the best presiding officers of beekeepers' meetings that we have in the country. He has a wonderful faculty in drawing out discussion and clearing up conflicting testimony. We doubt, too, if there is a better posted beekeeper anywhere. The secretary, Frank Markham of Ypsilanti, Mich., is also a honey producer, whose skill is attested by the fact that he holds a gold medal of the Michigan Beekeepers' Association. The vice-president, Hamlin B. Miller of Marshalltown, Ia., is not only an enthusiastic beekeeper but a good man to build up an association. The Iowa State Beekeepers' Association, of which he is secretary, is one of the strongest and best in the whole country. Almost every Iowa beekeeper, and many outside of the State, know "Ham," whose middle name is "Beeswax." Taking it all in all, the combination of officers is a peculiarly fortunate one.

The National Beekeepers' Association has gone thru a varied experience. At one time it had a membership of some two or three thousand with \$4,000 or \$5,000 in its treasury. We have attended some of these meetings when the attendance was 500 and more. At the time of its greatest prosperity there were a few who thought that there were too many supply dealers and bee journal editors on the board of directors for the Association's good, and for a few years there was more or less clashing at its meetings on account of this fact. The result was that the organization went to pieces. While it was intended as a sort of insurance organization to protect the beekeepers against persecution of certain persons who believed that the business of beekeeping was an encroachment upon their rights, it gradually merged over into a fraternal and social organization. Its membership continued to drop and the attendance at several of the meetings was little more than local, sometimes not over 50 being present. An effort was then made to re-organize it on a delegate basis, but this fell thru be-

cause the plan was too elaborate or too something.

Finally, when Francis Jager of Minnesota and a man of vision, became president of the organization, he made it plain that the National ought to do something in a national way, and notwithstanding that he was otherwise occupied, and notwithstanding that he was sent on a special mission to Europe during the past year by the Government, the organization under his leadership attempted and did some things that have meant a great deal of good to the beekeepers of the country at large. It was instrumental in securing financial help from the Government until now we have \$50,000 a year, with 11 special field agents operating under Dr. E. F. Phillips of the Bureau of Entomology, Washington, D. C., and giving their whole time to develop beekeeping in the United States.

The National was likewise instrumental in getting from the Bureau of Markets regular market quotations, secured by excellent men, free from any possible financial bias. That the Bureau of Markets is going to be of immense help to the beekeeping industry of the United States, has now been demonstrated beyond any question of doubt.

If the National had never done anything more than these two things, even with its present limited membership, it would well have served its purpose. The retiring president, Francis Jager, shows that he was thoroughly alert to the needs of the organization and the beekeepers of the country. To report all that he said at the last meeting at Burlington would fill too many pages of Gleanings. It is to be hoped that the new officers will carry out at least some of the policies that he recommended. He now returns to Europe soon to go into the American Red Cross Work.

It will take careful deliberation to mold the policy of the Association. It will result in loss of ground if the Association tries to adopt the schemes of every man who comes to the meetings and talks loud. In all the beekeepers' associations there is too great a tendency to put into office men with wild plans who talk well. Above all things a national organization must keep its feet on the ground and must not listen to men of untried ability and visionary schemes. This is the rock on which the National nearly split, and the wise man profits by such mistakes.

Then, what of the future? Hardly a day

passes now but the beekeepers of some county organize a local association, most of these organizations being formed at meetings held by the extension men of the Bureau of Entomology. This is excellent work, most of which will be of lasting value. The county clubs in California have shown what may be accomplished, and their work has only begun. It appears that the smallest units are being organized, and the logical step would be for them to affiliate with the state associations. Too many of our state associations are dead—deader even than some erroneously believe the National to be. They need new life, and they will surely get it when the county organizations begin to send representations to the annual state meetings.

With rejuvenated state associations, the National must of course become strictly a representative body with delegates from the states. This was tried a few years ago, as has been said above, but the effort was premature, for many state associations were not strong enough to send delegates, and there was also a division of opinion as to the policy of the National. It now having been shown that no National organization can safely enter the marketing field headfirst, the policy of the National is definitely that of education. Some day when there are more commercial beekeepers and when marketing is standardized, perhaps there can be a nationwide organization for marketing; but this, of course, can not be made from the top down.

Gleanings welcomes the organization of local or state marketing organizations, for they have proven their worth to beekeepers. Every friend of beekeeping must do so.

Gleanings believes that the revival of the National can progress only as rapidly as the state associations revive. Too many state associations have retained their officers too long, which almost invariably leads to a moribund condition. War calls for changes, and beekeeping is at war. General Pershing has sent some officers back from France because they lack "pep." Most of the associations have now elected their officers for the coming year. If the officers of your state association are not much in evidence during the coming season in the effort to increase production and build up the state organization, put them out of office at the next state meeting. Do it politely and without generating hard feeling, but do it. Many state associations meet only once a year, and in many cases the members hear nothing of the association except just before the annual meeting. The officers should do more than this. They can arrange field meetings, can help their organizations by publicity, and can often send helpful circulars during the year. They can see that all the members who sell on wholesale markets receive the Government market reports. They can support, and, if need be, wake up the beekeeping work at the agricultural colleges. Look into these things during the year—do not wait for the annual meeting to decide whether your association needs new officers. Don't forget, too, to lend

your state officers all possible aid and co-operation.

One of the duties of the state officers is to help President Running boost the National. That duty is not specified in the by-laws but it should be on the conscience of beekeepers. See that your officers boost the Government activities and, if they do not, find out why. If this is done all 'round, President Running will receive all the co-operation he can hope for.

Let us see the National next year is made up of delegates of our state associations. Will you help? Will you be there?

DR. EDW. F. BIGELOW, editor of *The Guide to Nature*, in the February issue of

 Again—How Bees Build Their Cells? "How Honeybees Produce Honey-

comb," in which he seeks to demonstrate that "in making the comb, the honeybees never work in hexagons, but always in circles." His article is in contravention of the long and universally accepted theory that bees intentionally build their combs hexagonal. The *Literary Digest* for March 16, in its department of "Science and Invention," quotes the bulk of Dr. Bigelow's theory as printed in *The Guide to Nature*, thus giving it very wide circulation—if not approval. In a nutshell, Dr. Bigelow holds that the honeybee deserves not one particle of credit for making a beautiful hexagon; that all she does is to make a rude cylinder (circular) of wax, and by going in and out of such cylinder (which adjoins six like cylinders) she pushes out the sides, and it is this pressure on the sides of the cylinder, taking up the inter-cylinder space, that makes the hexagon. In other words, circular cells built in close contact become hexagonal when compacted together by pressure from within the cells. The English authority, Cowan, has set forth this theory of cell-building, quoting Mullenhoff in support of his own view. Cheshire is another authority who inclines to this theory. Huber does not do so, and most of the latest authorities do not.

THE ARTICLE by Chalon Fowles on page 215 of this issue suggests that perhaps we ought to set a

 The Let-Alone Hive and Its Limitations. "let-alone hive" or "let-alone sys-

tem." In the article on page 143, March issue, where we describe Allen Latham's "let-alone hive," we were merely showing what had been done and what might be done under some circumstances.

It's not to be understood that once-a-year visitation to such hives would suffice in the great majority of cases. It would never do

where there are bee diseases, nor for most inexperienced beekeepers. There are some practical beekeepers, however, who make a success of running their bees at long range and visiting them only once or twice in a season—once to take off the honey and again to put them into shape for winter.

Allen Latham of Norwichtown, Conn., has done it, but on account of the possibility of bee disease may not find it practical to continue it. The average beginner would do well to look the hives over a number of times in a season, but not too often. In this connection it may be well to say that many beginners "tinker" their bees to death.

But no let-alone hive will work unless it has a large capacity, a location screened from prevailing winds, and unless in a locality where there is an unfailing fall flow. There is a large field for development in the Latham plan. Latham plan did we say? We mean, development of the large-hive idea, which is as old as the hills. There is no question but that a hive of large capacity requires less attention than one made up of small units requiring the addition of an extra unit every now and then. In a small hive the bees are liable to starve for the want of stores either during the summer or winter, unless frequently inspected, while the hive of large capacity that is not "tinkered" with too much may carry a colony thru from year to year with once-or-twice-a-year visitation, providing the locality is suitable and the right man is on the job.

 THE SUGAR SITUATION, while not as tense as it was, is far from being satisfactory.

 The Sugar Supply for Beekeepers. Large quantities of sugar have been sent inland from both coasts.

More sugar is available, but not enough to supply many beekeepers who are urgently in need of it.

Some states have already followed Ohio's example by gathering up a supply of sugar exclusively for the use of beekeepers. This sugar has been put into the hands of local bee-supply manufacturers and is being sold at cost.

As Gleanings was instrumental in buying about 10,000 pounds of sugar for Ohio beekeepers and a supply of this is still on hand at Columbus, we can help in our own State, if Buckeye beekeepers will apply to Prof. Jas. S. Hine, Ohio State University, Columbus, or to The A. I. Root Company, Medina, O. Michigan beekeepers should write to B. F. Kindig, State Apiarist, East Lansing, Mich. He will issue a permit so that sugar can be obtained of M. H. Hunt & Son at Lansing or of A. J. Woodman & Co., at Flint, Mich. Massachusetts beekeepers should apply to Dr. Burton N. Gates of Amherst, Mass. Illinois beekeepers should apply to Dadant & Son, Hamilton, Ill.

In a general way, we would advise beekeepers who are unable to obtain sugar from

local grocers to apply to their nearest bee-supply dealer. Failing to get it of him, write to the U. S. Food Administration, Sugar Division, at your state capital, stating your exact needs, and how many colonies you have that will starve unless you can arrange to get sugar thru your grocer or supply dealer.

In very many cases, the starvation situation can be easily met by taking combs of stores from colonies that have died during the winter and giving to those that are alive. These combs will be perfectly good unless badly smeared with dysentery stains. Even then, in case of no sugar, we would give such combs. If the colony is strong it will clean up and prosper.



IT FREQUENTLY happens that there is a shortage of bees in the North and at the same time a great



Relieving the Shortage of Bees. surplus in the South. This is especially true after

a long, hard winter

such as we have just experienced; but unfortunately the winter has been severe on bees in the South and many of our Southern bee- and queen-raisers are going to be hard pressed to take care of all the demands for bees.

Another condition sometimes arises and that is this: A Northern beekeeper can use, owing to the unusually favorable conditions in his locality, two or three times the number of bees that he has available. During the same season, at almost exactly the same time, there are other beekeepers in other localities where the season promises to be an absolute failure, who will have a large number of bees on hand that will be nothing but an expense. If the two men could get together, the one using the capital of the other, it would help out wonderfully during a season when there is a world shortage of food. We have a case in point. The beekeepers of the Northwest could probably use twice the number of bees that they now have. On the other hand, there are beekeepers in New Mexico and other southern sections, where the alfalfa fields have been converted into grain fields, who will have thousands and thousands of colonies that will not be honey gatherers this year.

We suggest that the considerable number of Government apicultural extension workers scattered over the United States might be able to place in touch with each other the two classes of beekeepers, those who need bees and those who have them to spare. It would do no harm for one or the other of these two classes to correspond with Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C. He could put the enquirers in communication with the nearest special field agent, who might, and probably would, know just where there was a shortage or a surplus of bees, and bring about the desired combination of bees and territory.

TO winter bees successfully is one thing. To carry them thru the spring is quite another. This is only another way of saying that to "spring" bees is often more difficult than to winter them. The latter part of March and the month of April are often very treacherous, so far as weather conditions are concerned. We may have in the North anything from zero cold to warm, balmy, summer weather. A sudden change from cold to warm, or, rather, a week of warm weather followed by severely cold weather, is very hard on the bees and brood. It sometimes happens that the mortality during the month of April is greater than at any other time in the year. During the spring of 1881, for example, in northern states, the April losses were anywhere from 30 to 60 percent, while the actual winter losses during the previous winter months were not over 10 or 15 percent.

As a general rule, however, one feels that if he can bring his bees thru in fairly good condition up to the first of April, his problem of carrying the bees thru to May or the middle of May is not a serious one.

At this point it should be made very clear, especially to the beginner, that more harm than good is often done by tinkering with bees in the spring. This does not mean that bees should be left alone during this period, for some springs they certainly do need special care.

April is usually the month for setting bees out in the spring. The rule is to wait till after the first natural pollen is abundant. More

SPRING MANAGEMENT

A Few Important Things One Ought to Do and Some Things One Ought Not to Do in the Spring

By E. R. Root

trances of the dead colonies and contract the entrances of the weak ones.

The entrances of all the live colonies should be cleared out by means of a hook-

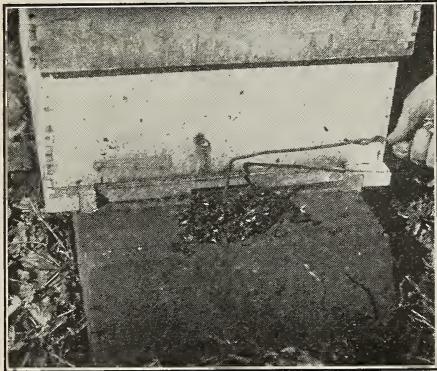
ed wire. This wire should be long enough to reach clear under the frames, and all dead bees should be raked out. Later on, when the weather warms up, enough so that bees can fly, and so that the colony can be opened without any damage, all the frames can be taken out, when the hives can be cleaned. Usually this practice is unnecessary, for a good colony will carry out all the dead bees themselves.

If any colony shows dysentery (dark brown or black spots around the entrance) there is not much if anything that the begin-



CONTRACTING THE BROOD-NEST.

When a colony is weak in the early spring, about all that can be done is to contract the room in the hive down to the space it can occupy by a chaff division-board as shown. Care should be taken to see that it has one or more combs of stores.



CLEANING ENTRANCES.

In early spring after a long hard winter it is often necessary to rake the entrances clear of dead bees with a bent wire. Should the entrance entirely choke, it would kill the bees.

harm is done from setting out too early than too late, unless dysentery has started. Wait till a warm, sunny day, then set all the bees out. After they are out close the en-

ner can do except to contract the brood-nest to as many frames as the cluster can occupy. Where two colonies stand side by side it is sometimes advisable to unite the two such clusters in one hive; but in that case one of the hives should be taken away entirely and the other put half way between where the other two stood. There is not much use of uniting bees in the spring unless the colonies are side by side or in pairs. One can, however, bring weak colonies from outyards and unite each with a weak one at the home yard, but it does not do much good to take two weak colonies from remote points of the same apiary and put them together.

The beginner may ask, "What is dysentery?" Properly speaking, this is a form of diarrhea. It is caused by insufficient protection, too small a cluster, poor stores or a combination of all three. The bees in their effort to keep warm have consumed too much stores and clogged their intestines, with the

result that purging follows. When it is so bad that during midwinter the bees spot the inside and outside of their hives with large, dark-brown spots, almost black, it means almost sure death. If these signs of dysentery appear along the middle of this month or about the first of May, the colony may or may not recover itself but it will be all summer in building up to be worth anything.

If there is no fall flow, it is far better to feed the bees in the fall and give them enough food to carry them, not only thru the winter, but also thru the spring until the next honey flow. Feeding in the spring, especially liquid syrup, should be avoided wherever possible, as it causes too much excitement in the apiary, and often results, as explained, in the loss of a good many thousands of bees.

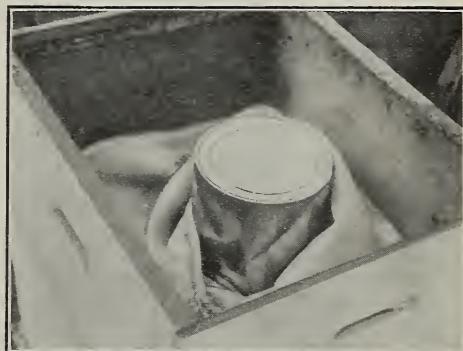
Feeding in the Cellar.

Bees can be fed in the cellar this month, during a warm day when the bees can fly, as already described. A cake of this can be laid directly on top of the cluster. In order to do this it is sometimes necessary to use an upper story or rim of wood about 1 inch or $1\frac{1}{2}$ inch deep. The candy is laid on top of the frames, the rim is set down over the hive and over the whole a cover. If the bees in the cellar run short of stores, the hard candy is preferable to anything else we know of, except actual natural stores themselves. In the case of an emergency a frame of honey can be laid on top in the same manner that candy is placed.

The hives should not be opened up except during a warm day when the bees can fly. Then it is important to ascertain whether there are sufficient stores to carry the bees thru. If the cluster is a small one, occupying only two or three frames, it should be crowded over to one side of the hive, and a chaff

The colony should then be tucked up warm and left until about the first of May, at which time the division board may be shoved over and other frames added—as many as the bees can occupy.

Feeding liquid syrup during April in the North is always attended with more or less danger. Beginners should remember that syrup feeding at any time starts the bees to flying out at the entrance. If the weather is cold or chilly, many thousands of bees are lost. When colonies are short of stores they should be given frames of honey, or frames of sealed stores left from the previous fall or winter. For this purpose it is the practice of our best beekeepers to lay aside several hundred nice combs of honey. During this spring there will be not a few dead colonies



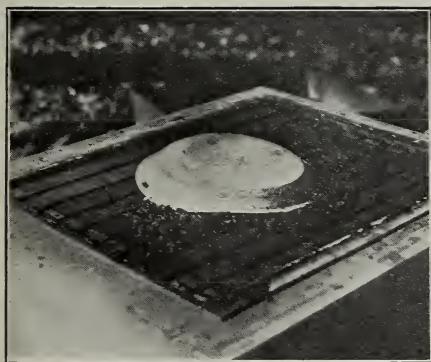
FEEDING FROM AN ORDINARY FRICTION-TOP PAIL.

This is one of the good and cheap means of feeding syrup. The top of an ordinary friction-top pail is punched with about a dozen holes, the pail filled with syrup, the top pressed in place, and the whole inverted in an upper story. The bees will take the syrup out very readily. In cool weather the pail of syrup should have packing around it to prevent the escape of heat from the cluster.

and one can take one or more combs of stores from these colonies and give to those that are alive and running short.

When one has no combs or stores of any kind, and no dead colonies to draw from, he then should feed sugar made over into hard candy, as explained on page 140 of March issue. This should be poured while hot into paper pie plates and when cold they should be inserted over the cluster of bees, but before this is done, the size of the brood nest should be contracted with the division board as already explained. To put on this candy it will be necessary to put on an empty half story or a full story when the candy should be covered with leaves or packing material of some sort.

In the more southern states or perhaps during the latter part of this month in the North, liquid food can be given safely; and one of the handiest and cheapest ways is to use in an empty super or upper story a five- or ten-pound friction top, tin pail, such as is used for retailing honey. The cover should be punched with a dozen or more holes made with a 3d nail which is about one-tenth



FEEDING CANDY IN THE SPRING.

In early spring there is danger of some colonies starving. Where there are no combs of stores, cakes of hard candy in paper pie plates are much to be preferred to feeding liquid syrup.

division board should confine it to as few frames as possible. Care should be taken that the bees have at least one or two combs of stores, and these should be placed close to and just outside of the brood, if there is any.

inch in diameter.. Then when the can is filled with hot syrup and the cover or friction top is pushed into place, it may be inverted and set down over the frames. This should be given at night preferably and under packing of some sort. If the syrup is given hot, the bees by the next morning will have taken it all out and quieted down, so in case it should turn cold that day, they will not fly out.

All entrances of colonies that are dead should be closed tight; otherwise on the first warm day the bees of the live colonies will rob them out causing more or less of an uproar, during which the weak colonies, which might otherwise have remained unmolested, may be robbed out and entirely destroyed. But the greatest danger is that if there is any foul brood in the yard, such indiscriminate robbing will cause the spread of the disease thruout the entire apiary.

Feeding Pollen Substitutes.

There is another kind of feeding that may have to be resorted to some springs, and that is the giving of rye meal in trays or inverted hive covers in protected locations somewhere in the apiary.

Perhaps once in four or five years or once in ten years, there may be a shortage of pollen in the hives. The result is that the bees in early spring, before natural pollen is available, will visit all the stables and chicken coops in the immediate neighborhood, to get ground feed. This sometimes causes considerable trouble between the beekeeper and his neighbor. When this condition arises the rye meal should be put on in the beekeeper's own yard. In order to start the bees it may be necessary to put a little syrup on the meal.

After the bees once discover where it is, they will take it quite freely and abandon the stables and chicken coops.

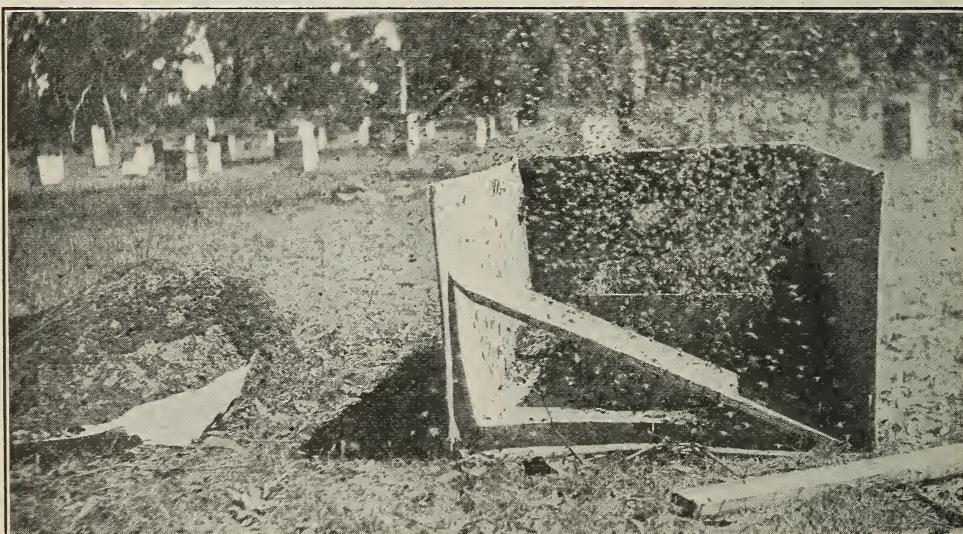
Spring Dwindling.

Beginners often hear a great deal about spring dwindling and wonder what it is. It is not a disease but a constant dying of bees until there are only a few dozen left. They may or may not show dysentery. It is usually confined to colonies that were weak or had insufficient protection during the winter. As the name indicates, the bees gradually disappear. When the cluster becomes small, the bees become active and begin to eat stores. This causes them to fly out more or less to evacuate their intestines, and, while out, they become chilled and die.

Cause and Effect of Spring Dwindling and Treatment Discussed by G. C. Greiner.

It is generally supposed that spring-dwindling is caused by unusual mortality among bees after the opening of spring. This is true in a measure; but it is not the main cause. Bees are always dying, especially at this time of the year. All the wintered stock consists by this time of old bees, and this fact alone would give them only a short lease of life at best.

But during the warm days of February and favorable weather in March and April, they are building up their colonies, exerting all their strength and energy in bringing up their rising generations to the necessary populousness for the coming honey-flows. A little later, when nature provides its greatest abundance of pollen, generally about the middle of May, they are seen by the dozens coming home panting and loaded down so heavily



FEEDING RYE MEAL.

During some springs when bees run out of natural pollen in the combs and before the new pollen comes in, it is necessary sometimes to feed a substitute in the form of rye meal outside in a protected enclosure. This is important when bees bother neighbors by invading their chicken-coops and feed-troughs for cattle.

that they can hardly reach their alighting boards. All this is a heavy strain on the vitality of the little workers, and the supposition can safely be accepted that not many of them survive beyond the beginning or middle of June.

This is the every-day, normal routine of bee life and does not cause spring dwindling. A weak colony that occupies three or four spaces and has a little patch of normal brood in the center of its cluster can hardly be called "the result of spring dwindling." Other factors are responsible for their weakness. More likely they went into winter weak and came out weak in the spring.

When I gave my bees their first spring examination about the first week in April (a slight glance from the top to make sure they had plenty to live on), I considered them in promising condition for a normal honey crop. I could see no indications that anything unusual could or would happen. About a month later, when I unpacked them, they were so heavy that I had to call on my daughter, my usual helper in such emergencies, to help me take them out of the sheds and set them on the ground. It reminded me very forcibly of Mr. Doolittle's assertion that plenty of stores were the means of building colonies up in the spring, and I anticipated that with all that honey my bees must be getting in fine condition for my spring manipulations.

About that time I was expecting and hoping that my queens, the first installment of which I had ordered mailed May 10, would arrive in time to begin dividing at the first blossoming of the apple trees. They did arrive May 12. I prepared them for making my divisions, and as soon as an open spell of weather permitted, I began work with the bees. Opening the first hive, one I had marked "extra prime" in April, I found its colony (imagine my surprise) sadly depopulated, at least in comparison to what I had expected. Thinking that some mishap had befallen this one, I opened the next, also marked "extra prime" and found it in the same condition—and the rest of the yard not much different. Everything that had been marked

drawing shows what I found—a genuine case of spring-dwindling, caused by complete failure of young bees hatching to take the places of the dead and dying generation. All the combs were practically broodless.

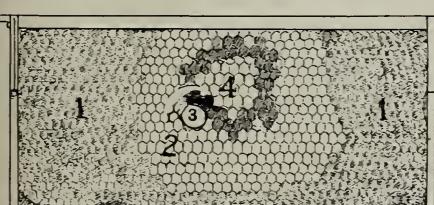
Mr. Doolittle's theory of "plenty of stores" is all right, if the conditions of the season are favorable. If the bees can fly, gather water and pollen, perhaps bring in a little new honey and otherwise make themselves useful to advance home affairs in general, then with plenty of honey in the hive, the queen is induced to fulfill her maternal duties of stocking up her hive with brood. But with such a season as we had that spring (1916), when from the middle of April until late in June, cold rainy weather prevailed during which time bees for weeks could not leave their hives, all the old honey they might have had would not have induced the queen to lay. My customary practice of reducing all my colonies to as few combs as they can well cover and filling the vacancies with division boards, gave me an immense lot of capped honey, all more or less granulated. From almost every hive I took from two to four combs, and when I had them all gathered up one-half of my honey-house floor was literally covered with such combs set on end. If I had left them in the hives, they would not have been touched by the bees for brood-rearing, and all the space they occupied would have been lost to the queen's use, and would only have been a strong incentive to swarming.

But I uncapped them—two, three and four at a time—and hung them under a little outdoor shed for the bees to work on them. As fast as the bees cleaned these combs out I inserted them in the center of the brood-nest of such colonies as could use them to advantage. This manipulation I kept up during the two months when no honey was coming in from natural sources, and by the time the sweet-clover flow began, about the middle of July, all that old honey was transformed into bees and brood.

It makes all the difference imaginable, whether a colony is clogged up with old honey in the hive or whether that same honey is brought in from outdoors. During a honey-dearth bees are as eager to carry it home as they are to gather nectar from natural sources, and the effect in regard to encouragement of egg production is nearly the same.

When the sweet clover flow came the bees were then in exactly the same condition as they are under normal conditions at the beginning of the white clover flow. They had entirely outgrown the effects of the previous spring dwindling; their hives were full of young, energetic workers, and their combs were covered from side to side with brood of all stages, leaving little chance to store incoming honey in the brood chamber. Altho the honey-flow from sweet clover is never so profuse as the earlier white clover flow, the colonies were, as a consequence of close management, in the very best condition for super-work.

G. C. Greiner.



1, is sealed honey; 2, empty cells; 3, sealed brood;
4, cells from which brood has hatched.

prime was hardly medium; all the mediums were weak; and all the weak mere remnants and small ones at that. This was a puzzle; I had never experienced anything like it before. To ascertain, if possible, the cause of this strange phenomenon, I examined quite a number of broodecombs. The accompanying

THE average beekeeper can increase his production of honey by giving more attention to the combs in his hives. To give the bees only starters in the frames is but little better than the old box-hive methods. Combs built from starters will contain an excess of drone comb, and an over-abundance of drone brood in the hive in the spring, when workers should be hatching, is a decided disadvantage. It costs the bees more in time and feed to rear drones than it does to rear workers, and, if many of them are reared, when the honey flow comes there is likely to be a lack of workers.

To use full sheets of foundation without supporting wires is a waste of time and material, as the foundation will usually sag with the weight and heat of the bees, so that but few cells will be suitable for worker brood. With the use of wire, properly put in, the foundation will be supported so that nearly every cell in a comb of the standard Langstroth frame will be perfect for the worker brood.

I have tried a variety of methods of wiring, and for a number of years have used one that has given satisfactory results, and I believe it will be a help to others. I use the standard Langstroth frame of the all-wood pattern, with the $\frac{3}{8}$ -in. top-bar, and do not have any sagging of top-bars, because a portion of the weight is supported on the end-bars of the frames by my method of wiring. The plain, old-style Langstroth frames are more easily manipulated in all parts of the work, especially in extracting. But this method of wiring can be used with any pattern of frame that has four holes pierced in the end bar.

The first step in wiring is to drive in a $\frac{1}{4}$ -in. tack half its length in each end-bar, near the top hole. The frame is placed in a

THE ELIMINATION OF DRONES

How They May be Excluded by Wiring; by the Location of the Entrance: and by Using a Bottom Starter

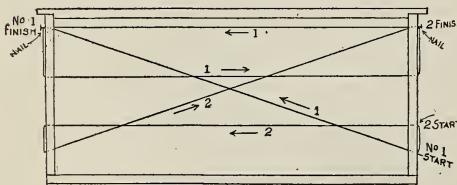
By W. P. Southworth and E. R. Root

thru the right-hand, lower hole, as the frame stands before you; from there, diagonally across the frame to the left-hand, upper hole; down to the left-hand, second hole; across to the right-hand, second hole; up thru the right-hand upper hole; across thru left hand upper hole; wind around the tack; and secure by driving the tack home; first tightening the wire so that it is not slack. Measure off a length of wire that will reach from the right-hand, lower hole, across the frame and diagonally back to the right-hand, upper hole. (It is best to cut the wire off a few inches too long until you are accustomed to estimating the correct length required.) Thread the end thru the second right-hand hole from the bottom; pass across thru the second left-hand hole, down to the lower left-hand hole, and diagonally thru the upper right-hand hole; tighten all of the wires so that none of them are slack; wind the end around the tack, and secure as before; cut off the short piece of wire that is left over.

When finished, you have three wires running parallel with the top-bar, and two running diagonally, thus forming an X in the frame. This arrangement of wires gives the support to the new comb where it is most needed—that is, at the top and at the ends where the greatest weight of honey is stored the first season, as a rule.

To get the best results, all foundation should be drawn out in the brood-nest between even combs. If this is not possible, good results can be obtained between drawn combs in the surplus chambers. It is well to avoid hiving heavy swarms on foundation in warm weather, as the foundation is liable to sag from the bees' weight and heat, even with the method of wiring here described. Good combs are the best property a beekeeper has, and are worth all the care he can give to make them perfect.

Sioux City, Ia. W. P. Southworth.



THE SOUTHWORTH METHOD OF WIRING.

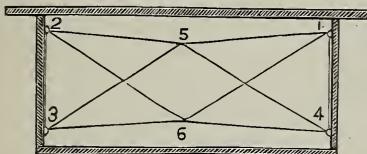
Two strands of wires are used. The first starts at the lower right hand corner, and follows the arrows. The second strand starts at the hole above the first start, and follows the arrows.

holder that keeps it rigid and square, with the top-bar up. The spool of wire is placed at a convenient distance to the right of the frame holder. (A brake, or drag, should be adjusted to the spool to prevent the wire from unwinding too freely.) Pass the wire

[When we were in Sioux City last summer, Mr. Southworth's associate, Mr. Brown, showed us this method of wiring, which they were using in their apiary. They liked it very much and found that it dispensed with the stretching of the foundation. The plan is very similar to the Keeney method of wiring that was exploited in Gleanings in Bee Culture in 1890, 1891 and 1892. At first, we were very enthusiastic about it, believing it would solve our trouble of stretching of the foundation. It was all right when used in connection with "heavy" brood and "medium" brood foundation, both of which weights have nearly disappeared from the market, on account of the expense; but when the ordinary "light" brood, which is now being used almost universally, was employed, we found there was a tendency of the foun-

dation between the diagonal intersections to bulge, making the combs wavy or uneven. Shortly afterward the electrical method of heating wires to embed the foundation came into use. This fact, together with the almost universal use of light brood foundation, which bulged between the wires, led us to abandon the method.

While the Keeney plan is slightly different from the one here described, the essential



THE KEENEY METHOD OF WIRING.

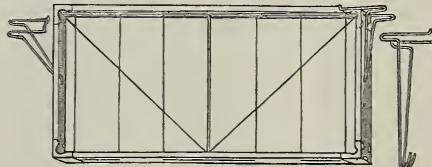
This method was illustrated in Gleanings for 1890, 1891, and 1892. It was abandoned because it caused bulging of the foundation in between the wire intersections.

points are the same. There have been other plans of intersecting wires, but they have not proved to be very popular with the general beekeeping public. It is possible that the general scheme was abandoned prematurely, for, with the present methods of wiring, there is a slight stretch or sag, either in the foundation while drawing out or after the completed combs have been filled with honey. The sagging or stretching occurs at the top of the comb, and most generally after combs are filled with honey the first time.

There is no particular objection to this sagging except that it has a tendency to encourage the raising of useless drones, and in this day and age, when energy must be conserved, it would be important for us to consider any plan carefully and impartially that will eliminate the building of drone comb.

For discussion of the Keeney plan of wiring in the back volumes of Gleanings, see page 371 of 1890; 563 of 1891 and 233 of 1892. The last-mentioned page tells of the failures of the Keeney plan of wiring and refers particularly to the bulging trouble already explained.

There is another method of preventing foundation from sagging, and less objectionable than the diagonal intersecting-wire plan. This is the horizontal plan generally in use, but with one or two more horizontal wires near the top-bar. The first two wires should be about 1 inch apart; the next wire $1\frac{1}{2}$ inch further away; the next one, 2 inches; and so on, making the distance increasingly further apart toward the bottom. This will eliminate the sagging but requires more wire and extra work.

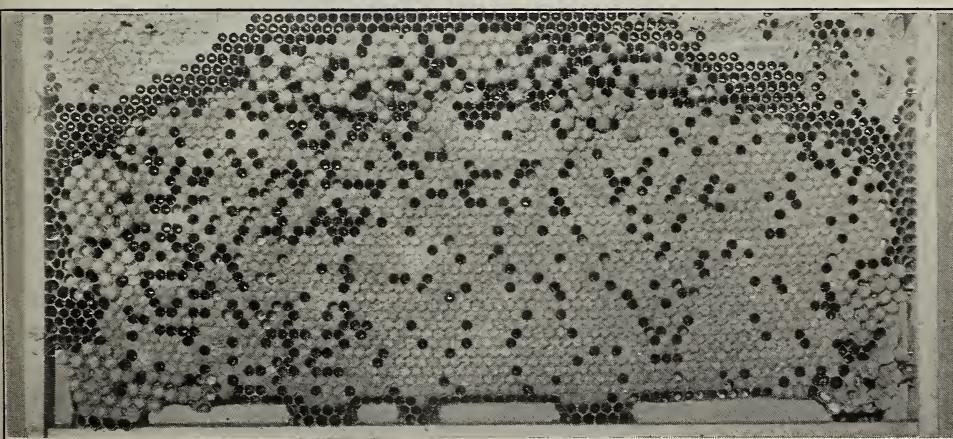


Another plan is to use vertical and diagonal wiring, as was used by A. I. Root in the early 80's. The attached cut shows a reversible frame that he used in 1885-'6, but the objections to this plan were the large amount of work involved in stringing the wires, and the difficulty of stringing wires thru thick top-bars so generally in use.

There is another cause for the building of drone comb and that is the position of the entrance.—Editor.]

The Elimination of Drone Comb by the Location of the Entrance.

In our March issue we mentioned having visited Allen Latham at Norwichtown, Conn.



FRAME OF BROOD SHOWING DRONE BROOD AT THE CORNERS.

Arthur C. Miller says that the drone brood found so often in the corners of Langstroth frames is caused by the position of the entrance in the end of the Langstroth hive.

At that time we also visited Arthur C. Miller of Providence, R. I. Among other interesting points of discussion that came up was the question of the elimination of drone comb. We mentioned that, notwithstanding that we were using at our apiaries full sheets of foundation, there was considerable drone comb in the corners of the brood-frames. Why this was there we were unable to explain. Mr. Miller immediately said that he thought he could offer a solution.

"You know," he said, "I have always been an advocate of side entrances rather than at the end of the hives. There are more reasons than one in favor of this position. There is better ventilation, because the remotest parts of the hive are nearer the outdoors. But most important of all, the side entrance eliminates the building of drone comb when full sheets of foundation are used. When the entrance is placed at the ends of the frames, as in the standard Langstroth hive, the bees cut away the comb in the fall at the corners of the combs next to the entrance. The next spring they fill in this space with new combs, and, of course, it is drone comb."

"By the law of chance, these same frames will be put into the hive again in a reversed position. The result is, that both ends of the frames near the bottom corners may have drone comb. By my plan of side entrance, I put a frame of drawn comb next to the entrance and then I can rest assured that all the other combs will remain worker, because they are back from the entrance and screened by the comb in front. In the breeding season the next spring I remove the drone comb and put in the worker. When my frames are properly wired I have all worker combs."

"Do not take my word for it, but try it out yourself. In the fall, just notice how the bees cut away the corners of the combs next to the entrance; then next spring see how they build it out again with drone comb."

During several seasons we have noticed more or less drone comb in all of our frames at the corners, as shown by the accompanying picture and during the height of the honey flow we will be raising nearly 2 per cent of drone brood. This is not only an unnecessary waste of time and energy on the part of the bees, but the rearing of drones cuts down the actual honey crop. They are a nuisance when an upper story is put above perforated zinc, because the drones in their effort to get out of the hive, will clog the zinc or the excluder and interfere with the ventilation of the super.

What Mr. Miller said interested us very much at the time. On arriving home we laid the matter before Mr. Pritchard, our queen breeder, who is a very close observer of things that occur inside of a beehive, and this is what he writes:

I entirely agree with Mr. Miller in having the entrance at the side of the frames, with a drone frame next the entrance; but I have not observed that the drone cells are built near the entrance more

than at other places. Drone cells are built at the lower corners of the frames because it is the last part of the frame drawn, and queens usually do not lay drone eggs until the brood-nest gets crowded. However, I intend making careful observations to determine whether or not Mr. Miller's idea is correct.

M. E. Pritchard.

We also submitted the matter to Chalon Fowls, our neighbor over at Oberlin. Mr. Fowls is a beekeeper of long experience and likewise a close observer. Mr. Fowls writes:

Isn't that A. C. Miller the most provoking chap, always thinking up something to upset one's plans? Here I was thinking that as we had 500 or 600 combs drawn out from foundation in upper stories this season, I could use them next year in the brood chambers in making new brood nests in our method of swarm control. Then we could put on new frames of foundation, to be drawn out as before.

These new combs are all worker and straight as a board, their only fault being that open space along the bottom-bar. I had also thought of a plan for next year, to get worker comb built solid down to the bottom-bar, simply by putting in a bottom-start'r of heavy brood-foundation, perhaps having a groove cut in the center of the bottom-bar to receive the foundation. And now that troublesome Miller comes along and says that the bees will cut out the corners from drawn comb if near the entrance—and I'm awfully afraid he's right. And, if he is, then the problem is not solved by bottom starters, and it would not be easy to make side entrances to chaff hives, especially to those with tight bottoms.

I had frequently noticed new combs rounded at the corners, and when patching them had noticed that one end would often be rounded more than the other; but I gave the matter little attention, being simple enough to think the bees had only cut out the foundation at corner, never once thinking of their cutting out the finished comb like that. Well, if this new wrinkle, to have the entrance on the side, comes to be a fad, what is to be done with the other Miller (Dr. C. C.), who often raises his hives on four blocks or bricks? Shouldn't think he'd have any combs left at all, or only a fringe of drone comb all around.

You know how natural combs are often built, when nothing but narrow starters are used—worker first, then drone comb for storing honey beyond the circle used by the queen. Well, I have just been out and examined a set of 10 combs that we bought this summer and which it is probable had never been removed from the hive at all. They were natural combs, or, at least, had no more than starters to begin with. There was some worker comb in the center, with perhaps a third drone comb at the ends, while some were all worker comb; but every one of the 10 combs was built with a space at the lower front corner. Of course, this is no evidence that combs would be cut out near the entrance, after having been built, but it does set us to wondering.

Oberlin, O.

Chalon Fowls.

The matter is before you, brother beekeepers. The elimination of drones and drone brood, if it can be accomplished in the manner that Mr. Miller states, would mean thousands upon thousands of dollars to the beekeepers of the country. It is our intention to try out the experiment, and we suggest that those interested, especially extracted-honey producers who are annoyed by the drone nuisance, try it out and report next season what they have learned.

E. R. Root.

FROM THE FIELD OF EXPERIENCE

AT VERY LITTLE COST

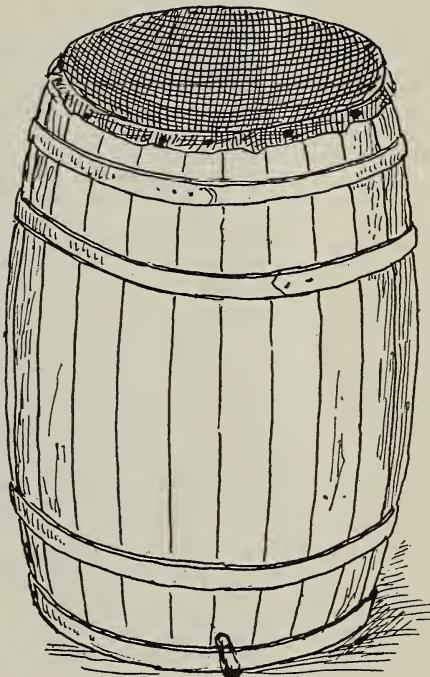
A Wisconsin Beekeeper Tells How He Provided an Extracting Equipment

In this era of extraordinary conditions forced upon us for universal safety, it behooves every one to produce and save to the utmost of his ability. In this endeavor the beekeeper is on the firing line and taking a leading part to help down the hydra-headed monster that would dominate the world.

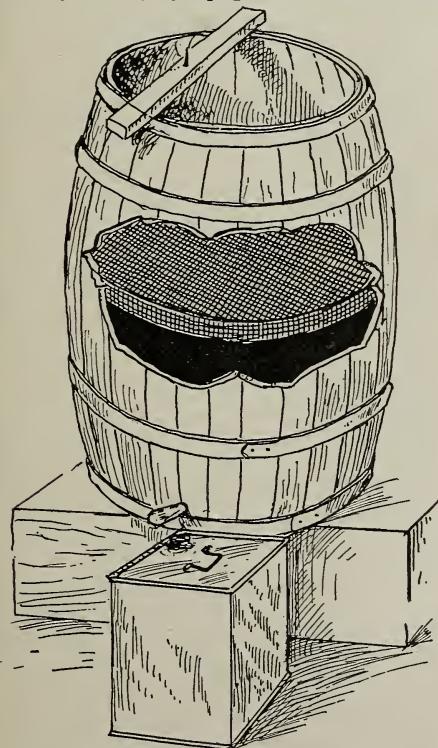
With prices of honey high and soaring and the market getting bare, it is safe to predict that honey values the coming season will reach an altitude above anything ever known in history. Especially may this be expected for extracted honey. With this prospect of advanced prices in this division, many changes from comb to extracted will be made this season. For the benefit of the small and medium producer contemplating such a move, but hesitating on account of the expense the change would entail, I offer the following plan of a cheap and effective home-made equipment, that I devised and used the past season to my complete satisfaction.

Briefly stated, my equipment consists main-

ly of three sugar barrels and an extractor. I selected good sound barrels and paraffined the lower half of each thoroly, having pre-



COLIEN'S HONEY STRAINER.



Colien's home-made uncapping-can, which is an ordinary sugar barrel waxed on the inside up to the screen. The cappings fall on the screen and the honey drains thru into the lower part where it is drawn off into square cans.

viously bored a $\frac{3}{4}$ -inch hole just above the bottom of each one and fitted with suitable plugs to hold or draw off the contents. Two of these barrels I fitted with wire screen tacked inside just below the center of each to hold and catch the cappings. One of these I arranged for an uncapping tank by nailing a 2-inch strip of lumber across the top at about one-third the distance from one side. This strip was provided with a sharp pointed nail to project upward about an inch to receive and hold the frame while uncapping. The third barrel I arranged with wire screen sunk in at the top and tacked all around to serve as a strainer and receiving tank. This barrel I set up on a platform just high enough to allow the placing of a 60-pound honey-can underneath for filling. To fill, I put the opening right under the hole in the barrel and loosen and draw the plug gently upwards along the barrel and the honey flows nicely into the can without a drop of waste. The honey being thick, there is no spurt from the hole but an even flow straight down into the can. The work is of such a simple nature that any one can do it, and, aside from an extractor, such an equipment costs less than a dollar for material.

Manama, Wis.

E. E. Colien.



FROM THE FIELD OF EXPERIENCE



BIG BEEKEEPER'S BIG IDEA

Promises Big Profits by Forcing the Bees to Move Stores to the Brood

If I could step into your yard and in five minutes explain and demonstrate how to put \$10, \$100 or \$1,000 into your pocketbook every year, you might be interested. Aside from the actual visit to your yard, I can do that very thing. Here it is: \$10, \$100 or \$1,000 free, to those who are prepared with an open mind. No joke, no hoax, for I know exactly the value of the plan, the economy of labor, the results in booming colonies to gather honey—booming colonies to gather honey, the most important, oft-neglected, factor in all beekeeping.

In spring, or all winter, every good colony must be in a two-story hive, with brood-nest above, super below. When breeding has made a good start in several frames, take all combs containing honey and no brood from the brood-nest and put them below in the lower story; contract the entrance, and fill in the vacant space in the upper story with the very best empty all-worker combs which you own. That's all, except that in unusually bad weather, you can set off the upper story, scratch the cappings on a comb of sealed honey, and replace, without disturbing the actual brood-nest. Seldom necessary.

By this plan you so place the honey that the instinct of the bees demands its removal to empty cells near the brood, and, at all times when the temperature allows, that's what the bees are doing. This increased "handling" of stores means greater activity, more brood-rearing and strong colonies early as a result of this activity.

Another point: you have provided the queen and bees with a great amount of comb-room, all in one story, where the increase of brood will not be hampered with any considerable amount of sealed stores near the brood. And not so soon will it be necessary for the bees to rear brood in another story, always wasteful in early spring, as there is so much space to heat, containing no comb—only bottom-bars, bee-spaces and heavy top-bars.

The principle, however applied, is simply this: for big colonies, early, put the combs of honey at a distance from the brood, preferably near the entrance, and the bees are kept constantly active, moving the honey nearer to the brood.

Less labor, big colonies, added income for you.

E. F. Atwater.

Meridian, Ida., Nov. 1, 1917.

[We asked R. F. Holtermann of Brantford, Ont., who chanced to be at our office when Mr. Atwater's exceedingly interesting and enthusiastic article came to hand, to comment on the plan. This he consented to do, writing as below. Our readers may be in-

terested to know that Mr. Atwater is a special field agent of the U. S. Dep't of Agriculture, selected by Dr. E. F. Phillips for apicultural work in California, Arizona and New Mexico.—Editor.]

The article by Mr. Atwater brings forward an excellent idea, viz: That to get the bees to move uncapped honey in the hive will stimulate brood-rearing. To be able to bruise honey in combs in the lower story is also a method which would have a decided advantage over breaking the cappings on honey actually in the brood-chamber occupied by the bees. I am afraid that many beekeepers are not prepared to accept the statement that the colony should be in possession of two brood-chambers at all times. This might be true—is true, if an eight-frame hive is used—but I would not be prepared to accept the statement when using a 10- or 12-frame hive. I would not accept it. Then in many localities, including my own, at the time when colonies require stimulating I rarely have enough honey in the brood-chamber to make it worth while having a brood-chamber under the one occupied by the bees—that is the time when bees have the least honey.

R. F. Holtermann.



HER LAST YEAR'S CROP

A Michigan Woman Succeeded with Queenless Colonies in a Poor Year

Last May I explained thru the pages of Gleanings how I obtain good crops of honey by making each colony queenless as soon as the bees are well started in the second super, nine days later destroying queen cells, giving a comb of young larvæ, and at the end of nine more days destroying all queen cells but one. Doubtless some beekeepers are wondering how much of a crop my queenless bees succeeded in gathering during the poor season of 1917.

In the spring I found 160 of my 170 colonies were still alive, but several of the small colonies did not build up in time for the summer flow, on account of my being gone from home three weeks just when they most needed help. The spring was very backward, which was hard on all the apiaries, but good weather in fruit bloom did wonders, so that most of the colonies were ready for the flow at the usual time. In ordinary seasons, the supers on nearly all of the colonies are heavy with partly capped honey by July 4. This year it was quite different, there being very little surplus on even the best colonies, while many had not begun storing at all. I was obliged to keep the colonies strong and ready, waiting for the flow that proved to be three weeks later than usual. During the entire season there were only a few good days that the bees were able to gather honey, and the

FROM THE FIELD OF EXPERIENCE

farmers had so plowed up their land for cultivating crops that I could not help wondering where the honey could possibly come from. There is a little basswood, a few red raspberries, and here and there a buckwheat field, all of which yielded very little last year. There was also an abundance of fall flowers that generally yield more or less.

When the time and conditions came right, I dequeened my colonies as usual and had them requeened again, with everything in the best condition for the fall flow that failed to materialize. I had increased 15 colonies in each of my apiaries and had hundreds of partly filled combs of early honey on all of my increase and weak colonies. Instead of getting these combs filled in the fall for extracting, as I could have done in any ordinary season, they were nearly empty on account of excessive brood rearing. By careful manipulation I was able to winter 150 colonies in all. These were supplied with sufficient stores so that it was not necessary to feed them.

My 1917 crop brought me \$1,100, the colonies run for section honey averaging 50 pounds per colony. I had a large amount of light weight and unfinished honey this year that I sold to the home trade. Nearly \$300 worth of this honey was sold from my home in the country, nine miles from a railroad station. It brings me nearly as much in case lots as I get for the best honey. I seldom sell less than a 12-section case or a 10-pound pail to a customer, and it is my policy to discourage the sale of smaller packages.

Sand Lake, Mich. Mrs. S. Wilbur Frey.



THAT LET-ALONE HIVE IDEA

Even Mr. Latham Would Not Recommend It as Practical

In the March number you have an article on "The Let-alone Hive Idea" that I feel ought not to pass unnoticed, or go to the A. B. C. class without protest.

In the first place, you call it "a new plan." But I don't see that it is very much different from what I have seen practiced by the farmer beekeepers for the last 40 years. Nearly all have what I call immovable frames; some have large hives and some have small; but there is a remarkable uniformity about results, which can usually be expressed in one figure, thus: 0. If by any chance one of these fellows gets a single super filled with honey in dirty, travel-stained sections, he is delighted, for, of course, it was unexpected as well as undeserved.

By the way while you are illustrating slipshod methods, you ought to take a snap shot of one of these chaps taking off his honey, sweltering in overcoat and mittens, his face tied up with a good warm veil, etc. It would

bring down the house all right, for it's more fun for the spectators than a box of monkeys.

I just had a call a few days ago, from an old friend of mine who is a medical missionary in darkest Africa. He describes the method of the natives which he calls crude. They use cylindrical hives made of bark, with a disc of wood in each end. They get the honey by removing a disc and blowing in smoke, and then cutting out a part of the honey. The disc is then replaced and the bees fill the hive again. Sounds very much like the method of our Connecticut friend.

But there is another point that should not be lost sight of. Any plan that results in a waste of food is unpatriotic at this time. The United States Government is requesting all food producers to speed up production and suggesting that competent beekeepers should buy or otherwise obtain control of any bees in their vicinity that are being neglected. Of course, it goes without saying that bees that are allowed to raise unlimited drones and are only visited once a year are neglected. For my part, I have always tried to encourage good beekeeping and discourage the opposite. Neglected bees not only are of little or no profit to the owner, but they are a constant menace to good beekeeping, as they may become rotten with disease and infect the whole neighborhood.

As to the non-swarming feature, there is no evidence given in your article that would be taken in any court of law to prove that there had been no swarms or might not be in a season when there is swarming from ordinary hives. Anyway, I am willing to go on record as saying that merely to give plenty of vacant space, with no drawn comb or foundation, may delay, but will not prevent, swarming in this part of the country, at least.

In conclusion, I would say to the A. B. C. class: our Editor should not be taken too literally, as he is a very unusual man, as you will see by referring to pages 163-4 in the March number, where one of the department editors gives a word picture of him. Besides, he was in an unusually good humor when he saw Mr. Latham's "let-alone hives," for that man (of the land of wooden nutmegs) had craftily filled him up with slapjacks. Nuff sed. But, as for me—well, I didn't get any of those slapjacks so I just sized him up as "shoost a poor teufel of a schoolmaster dot works for notting and poards around."

Oberlin, O.

Chalon Fowls.

[Mr. Latham himself, on Feb. 12, upon receiving a proof of the article on "The Let-alone Hive Idea," wrote some comment on it that would have appeared as a footnote to the article in question had his letter not arrived too late for publication in the March number. In this letter to the Editor he said: "Yes, you have used some poetic license. In the main, the facts are as you have stated." Then Mr. Latham asked that the following

FROM THE FIELD OF EXPERIENCE

footnote be added to the article: "The innocent subject of the sketch above would probably not be all there and would certainly be driven to the bug-house if he were to be fed daily upon such flattery. He wishes the reader to get out the salt-shake when he reads the article and use it frequently. The let-alone hive has at times done all that Mr. Root says; but those halcyon days are at present under a cloud. When the subject of the sketch had freedom from bee-disease and had a strain of bees which rarely swarmed, he carried on the let-alone style of beekeeping with marked success. When foul-brood came and those non-swarming bees succumbed at once, and he had to get in other strains to combat the disease, his let-alone hives began to take a back seat."

So, Mr. Latham is fair and square in the whole matter.—Editor.]

CONVERSATIONS with DOOLITTLE

He Answers a Question About the Spring Management of Bees for Best Results

"Will you kindly tell us in Gleanings how to manage our bees in spring so as to secure the best results in honey during the season?

The beginner in beekeeping is confronted with many perplexing problems, such as wintering, spring management, location, marketing the crop, etc., but of the many problems the most pertinent, perhaps, at this season of the year, is spring management. One of the greatest secrets of successful honey production is that of having a great force of field-workers during the honey harvest. After the harvest has passed and gone, the workers are largely useless consumers. A proper understanding of bee culture and the honey sources of our locality will convince an inquiring mind that the most important object in view, from the time one honey harvest closes until another begins, is the securing of strong colonies at the proper time. Those last three words mean a great deal to the apiarist. Any colony of bees that gets into shape for work only at or near the close of the main nectar flow becomes very largely a consumer instead of a producer. The ideal condition is to have the colonies vigorous and populous at the very beginning of the honey season. But how to get the colonies into the proper condition in time, is the important thing.

If a colony of bees comes out of winter quarters in prime condition and well supplied with honey, they may build up to the required standard without any aid from the apiarist, but many colonies will lack in some essential point. If this is not corrected or

supplied, a partial or entire failure will be the result. Careful attention to their especial needs during the weeks that intervene between the time of their first flight in the spring and the beginning of the honey harvest, is the work which pays the beekeeper. Some colonies may need one thing, and some another. In an apiary of any considerable size some colonies will lose their queen, or have one too poor to keep up brood-rearing sufficient for the best results. Such can be supplied by uniting with weaker colonies having good queens. Some may need more food to rear the large amount of brood necessary for the maximum number of bees just when they are needed to meet the main flow of nectar. This can be supplied by inserting combs of honey carried over from the previous season for this purpose, or from some colony which can spare a frame. All hives should be made as warm as possible by seeing that they are as tight as possible at the top. A good method, where wooden covers are used, is to place four or five thicknesses of newspaper over the top, and then press down the cap or cover over all. This is very effectual in preventing the escape of warm air. Later, when brood-rearing has been in progress for some time and some colonies are strong, a frame of brood nearly ready to emerge may occasionally be taken from a strong one that can spare it and given to a weaker one, thus tending to equalize both and bring all in the apiary so that the maximum number of bees may be on hand at the beginning of the main honey flow. A little later on, the two combs on the outside of the cluster, containing only a few eggs, may be taken and placed in the center of each colony and two well filled ones from the center put in their places, which manipulation will increase the egg laying of the queens and help to bring about the condition we are working for, namely, all combs filled with brood and eggs at the beginning of the honey harvest. Then there is another item well worth looking after in an occasional year: if the colony has too much honey, or, if early honey comes in so rapidly as to cause the combs to be filled before the queen occupies them with eggs, this honey must be removed or the colony will be weakened thru the restriction of brood rearing. This honey can generally be used to supply colonies that are short and need more honey than they have to put them in as prosperous condition as are most of the others.

The story goes that a noted pugilist upon being asked for the secret of his success, replied, "When I see a head, I hit it." The ability to go straight to the important element of one's business, and then to strike the proper blow, is certainly one of the secrets of success.

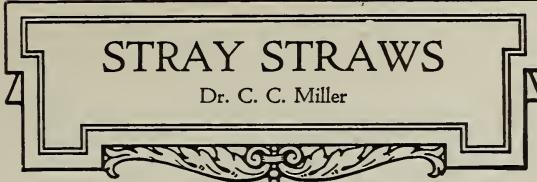
Borodino, N. Y.

G. M. Doolittle.

I SENT a five-pound pail of honey by parcel post to Chicago (66 miles) with no sort of packing whatever outside the pail. I wrote the address on the label, which had plenty of white space on it for that purpose, as the label went clear around the pail. I asked for a critical report of its condition upon arrival. I received the following: "Well, sir, that honey reached this house with no more dents made in it outside or inside than when it left your hands. But, oh, the dents that have been made on the inside of it since! Yum, yum! . . . The pail hadn't leaked the least bit. If you had gone to your store for it, taken the pail down and handed it to me, it couldn't have been in any better condition than it was when the mail-carrier handed it in at the door."

A Minnesota correspondent writes in substance: "In January Gleanings, page 29, you advise to get pound-packages from the South about the time we put supers on brood-chambers. Our crop is all from clover, and so I thought of getting packages as soon as natural pollen was at hand, to help colonies build up before June. So I ask whether your advice was intended for our clover-region, too, or only for localities where a fall crop is expected." Clover localities were included. Mr. Wing had advised waiting till bees had started whitening combs along top-bars. I raised the question whether two weeks earlier might not be better. It would be still better to have the packages as you propose, as soon as natural pollen appears, only, as Mr. Wing points out, the difficulty of getting and shipping so early is too great. Adding bees at the time of putting on supers would help somewhat on the crop; but two weeks earlier would help a great deal more.

Ye Editor having said that beeswax painted on foundation would prevent sagging, but "beeswax is expensive; and if we can prevent sagging by any scheme of wiring we are that much ahead," I replied, February, page 89, "Vertical wiring will do the trick." Now comes Arthur C. Miller, and says: "Yes, wax is expensive, but not so expensive as foundation, and by using the wax-paint plan I use foundation running 12 L. sheets to the pound—practically super foundation—and you cannot use that with wires or splints. And it takes very little wax, less than two pounds for 100 sheets. One may, if one chooses, add the wax to equal the weight of the foundation, but it is not my pleasure. Incidentally, labor cost is less with wax." I don't happen to have any reply on hand, unless to say that one must be an artist to paint, but I'm afraid he wouldn't be satisfied with that, so I turn him over to your ten-



der mercies, Mr. Editor. [In any case wiring would be necessary if extracted honey were to be produced. We would always wire, no matter what grade of

foundation we used. It is possible that a "super" foundation can be used in the brood-nest by painting the surface with melted wax; but we would wire it first—Editor.]

"The best food of all is frames of natural sealed stores," page 140. Good. You can hardly say that too often. Then right after it, "Whether a comb of natural stores or a cake of candy is given, the feed should be put on top." Yes, of course, when it's out of doors, but you mustn't forget that bees are sometimes in cellar, and when you want to feed a colony at the bottom of a pile, with another pile close at each side, it's not entirely convenient to feed on top. Ever so much easier to slip a comb of sealed honey—or even a cake of candy—under the bottom-bars. "Not room enough"? Oh, well, make your bottom-boards like mine, two inches deep, and there will be plenty of room.

The frantic call for sugar for spring-feeding from so many quarters is not complimentary to the foresight of beekeepers. Uncle Sam is all right to help out, but the help should be accompanied with the caution: "Don't let it happen again." Some say: "So long as a pound of honey brings more than a pound of sugar, it's economy to take away all the honey and feed back sugar." I don't believe it. For some reason, when one feeds sugar there seems to be a sort of "overhead" loss about it. Even if there were no such loss, and if honey were ever so much higher than sugar, sugar is utterly lacking in some of the constituents of honey that are essential. Feed bees on sugar alone for a sufficient length of time, even with the addition of pollen, and its my belief they'll die of anemia. Right here and now is a good time for every young fellow who aspires to be an up-to-date beekeeper to decide: "The bees have the first claim on the honey they gather, and I'll not take a pound of surplus until after I'm sure there will be enough for both of us without compelling them to eat sugar. If the hives are not big enough to hold a store to last until next honey comes, I'll save extra combs of honey to give in the spring, using fall honey if I can count on a fall flow; but, if not, then they must have theirs out of the earlier honey. Anyway, I'll not be caught feeding sugar."

Stancy Puerden, when I read, page 91, February, that vitamines were in honey, it gave me a delightful thrill. But why didn't

you say it in capitals—**THERE ARE VITAMINES IN HONEY**—just like that? As you say, vitamines are a recent discovery, and some people wouldn't know a vitamine if they met one in the woods. So I'm waiting anxiously for you to fulfill your promise to tell us more about them. I suppose they're the little fairy folk in butter that make the doctors advise us to give butter to growing children in spite of the higher price as compared with any butter-substitutes without vitamines. And if they add 10 cents or more to the value of butter, why shouldn't they do the same thing for honey? Or isn't honey as rich in vitamines as butter? Isn't it lack of vitamines, too, that makes people sick with scurvy or something when they eat food without vitamines? Now we have another thing to score in favor of honey. And at least three things we should make known from the housetops: That honey is ready for direct assimilation, not putting the burden of inversion upon the digestive organs as does sugar; that it contains minerals, in small quantities, to be sure, but absolutely essential to health; and that it contains vitamines, those things to be found only in the latest dictionaries, that have a mysterious influence upon digestion without themselves being subjects for digestion. And yet I've known people to say honey is possibly better than sugar. "Possibly?" The idea!

"Even in northern states, brood-rearing may start as early as January, if the bees are disturbed in any way, or if a few warm days occur," page 172. Don't you believe that in the north brood-rearing in January is more common than generally supposed, and don't you believe that it's the rule rather than the exception for it to begin in February? You know that brood-rearing begins sooner outdoors than in cellar, and we are told that it's because the severe cold outdoors makes the bees run up the heat in the center of the cluster to the breeding point. But then it might be argued from that that the farther we go north the earlier brood-rearing begins, and that would hardly do. Besides, we know that in the fall there is no brood-rearing caused by warm days. What do we know about bees anyway? [In talking with R. F. Holtermann, yesterday, he said that it was very seldom that any brood would be found in his outdoor wintered colonies in the months of January or February. We have found it repeatedly in both months. Perhaps if the colonies were adequately packed, so it would not be necessary for them to generate extra heat, breeding would not start so early. Mr. Holtermann believes in ample packing as does also Dr. E. F. Phillips of the Bureau of Entomology. In that case, breeding probably would not start much before the first of March.—Editor.]

It is a matter of much importance to know whether, in the treatment of European foul brood, it is better to keep the colony with-

out egg-laying longer than 10 days. J. E. Crane, page 154, thinks it is sometimes better, because in some cases of European foul brood "the larvæ die in all stages of growth, from two or three days old to those that have their growth and are even sealed over—being changed into a sticky, stringy substance," and he thinks three weeks or even four none too long a time for the colony to clean up. But, friend Crane, if I am correct in my view, it isn't necessary for the colony to clean up before egg-laying is resumed. After my first experience I always allowed egg-laying to begin while there were plenty of dead infected larvæ in the hive, and I don't think an old black larva carries the disease. It's the yellow fellow, not yet putrid, that the bees eat. I think, too, that in all cases there were sealed cells containing diseased larvæ, and I've always supposed that you would find these in all cases, if you looked for them. The sealing looks all right, but dig in and you'll find the dead larvæ. It is possible, however, that there may be such a thing as cases that need three or four weeks without egg-laying in order to be safe. But I think such cases must be decidedly exceptional, and I would advise that in any case the 10-day treatment be tried before proceeding to so drastic a measure as to have no egg-laying for 30 days. [We gathered the impression from Dr. Phillips that he was of the opinion that the period of queenlessness might vary according to the conditions; that those conditions might have to be determined by each beekeeper himself. In the case of some beginners, perhaps, the Alexander limit would be none to much.—Editor.]

"There is no easier, quicker, and safer way of feeding bees that are short of stores than to give them sealed stores of honey." That's the ripe advice given by one A. I. Root, page 178, and he might have added "better" to the "easier, quicker, and safer." Look it up, young fellow, and see what more he says.

J. E. Crane speaks of the difficulty of getting a stand of sweet clover altho "it seems to grow well along the roadsides," page 154. In this region you can get just as good a stand in the fields if you pack down the ground over the seed. In soft ground it fails.

After you get your pound-packages of bees in place in the hive, "they should be fed two or three pounds of thin sugar syrup until they are well supplied," page 142. If you don't happen to have the sugar, a comb of honey will do quite as well.

"In this locality" the winter of 1917-18 will go down in history as "the cold winter." Makes no difference to my bees.

That picture on the front cover, March. Isn't it a beauty? I've looked at it again and again, and every time it looks prettier.

BEES appear to have wintered pretty well up to this time, March 1. They had a nice flight Feb. 25 for the first time in three and a half months.

I notice a good deal of speculation these days as to how long present prices for honey will continue. After the Civil war the high prices for honey continued for some 18 or 20 years. Of course, a good deal more honey is consumed now than then. But it seems probable that the high prices then were caused by the greater supply of money in circulation. Almost all commodities have gone up and especially foods. Even the boy that gathered dandelion greens for the local hotel wanted twice as much as usual. When asked as to why, he replied that it was owing to the war.

Dr. Miller, March Gleanings, page 153, calls for some word that will take the place of "extracted" in describing liquid or pure honey. I have sometimes used liquid or pure honey to those who I thought would not understand if I used the word "extracted." But the Doctor objects to liquid because honey will not always stay liquid. Well, water surely is a liquid but does not always stay liquid as many of us in this part of the world have found out in the past winter to our sorrow. I have sometimes wondered if it were not better to use the words "strained honey," as most consumers would know at once that it was honey separated from the comb. After all, is there as much difference as we beekeepers have tried to make ourselves believe. Strained honey is honey separated from the comb by drawing it thru a coarse cloth or finer wire cloth by the force of gravity; while our extracted honey is separated from the comb by a coarse wire cloth or screen by means of centrifugal force, frequently carrying so many particles of wax with it that it is found desirable to run it thru another finer strainer before it is fit for market. If I remember correctly, the word "extracted" was rather forced at first by beekeepers so as to give the impression that the product was much superior to the old strained honey that our mothers used to render 75 years ago. I strain all extracted honey thru cloth before bottling.

That is a most enjoyable beekeepers' convention on pages 169 and 170 under the title of "Bees, Men and Things." More than 40 present from all over the country, and British Columbia and even Cuba and far-away Africa and Australia and Europe, too. No long-winded speeches here. No one "talked and talked and didn't say nothing," as the little girl said, but every one gives their experience in the briefest way—and what a difference. One says his bees have not flown

SIFTINGS

J. E. Crane

for two and a half months, while another says his bees have been getting nectar all winter. Some report bees as starving, while another says he

has extracted 30,000 pounds since November. One reports his bees under two and a half feet of snow, while somewhere else bees are swarming. One reports a very severe winter, while another says it is the mildest they have ever had—and so it goes. Let no reader of Gleanings in Bee Culture skip these pages. You can take a trip all over these United States and the whole round earth, almost, and know conditions existing among beekeepers while you sit comfortably in your arm chair reading Gleanings in Bee Culture. Give us more, Mr. Editor. [Thank you. We will give you more, if THEY gives it to us.—Editor.]

Our friend, Virgil Weaver, page 150, gives advice about sowing sweet clover. He says: "Sow the railroad's right-of-way; sow the highways; sow the byways; sow the vacant lots; sow the farmers' fertile fields; sow the barren spots; sow the cliffs; sow 10 pounds of white and 10 pounds of yellow for each colony." Now it seems to me this sort of advice will bear a little good-natured criticism. I am interested in increasing the yield of honey by all legitimate means, but when it comes to sowing seed upon other people's property, I draw the line. Honey is good, but there are some things of more value than honey or money. I have yet to see that any one has any moral right to enter the railroads' right-of-way or the farmers' fertile fields to sow sweet clover seed without the consent of the lawful owners; nor yet to sow seed along the highways beside land whose owners object to it. Would we like to have any one enter our fields and sow seed we did not want, or sow along the roadside close by? "Thou shalt love thy neighbor as thyself," is still binding. To get what we want, by hook or crook or without regard to the rights of others, is the law of the Hun. Again he says sow 10 pounds of white and 10 pounds of yellow sweet clover for each colony. This would require about 20,000 pounds to supply us, or \$4.00 worth of seed. No, thank you. I would much prefer to furnish my farmer neighbors with Alsike clover seed for nothing and let them do the sowing, and enjoy their smiling faces and good wishes for a prosperous season for the beekeeper.

Dr. Miller rather recommends the use of sections with drawn combs, believing the larger amount of honey secured will more than make up the difference in price for which it will sell. I think he is right. We shall use several thousand drawn combs in sections this year. See page 152.

We have heard so much of late about keeping up the morale of the fighting men. It seems almost incredible to us here in America that the Allied armies could ever admit defeat; but the Food Administration tells us that, if we once let the fighting men at the front fear that the women and children behind them are starving, the war would soon be over. If we should stop our exports tomorrow, in only a few weeks we would find we were alone in our war against Germany. It needs no vivid imagination to picture what would happen to us if Germany became the victor. If we do not want to risk a repetition of the horrors of Belgium, Poland or the invaded portions of France, in our own loved country, we must keep up the morale of the fighting men with American food.

We have already exported more than our normal surplus, and the only way we can keep up the exports is to save from our normal consumption. And our country cannot do it without the co-operation of her 20,000,000 housekeepers. Doesn't it give you a thrill to think that we women have it in our power to help keep up the morale of all the Allied fighting men?

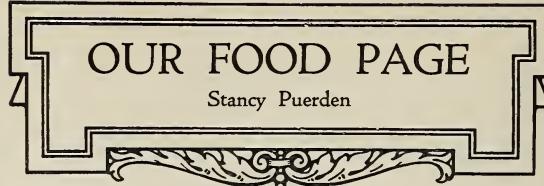
1918 War Gardens.

When you pass one of those recruiting posters picturing Uncle Sam looking straight at you with an accusing look, how does it make you feel? I know. It makes you feel that he wants you for some service, even if age or sex prevents you from fighting in the trenches. In my case it makes me feel like this. If our soldiers can offer themselves to their country to leave home and all that is dear to them to engage in the horrible work of trying to kill their fellow men, surely I can work hard in a pleasant home to conserve the food supply, and work hard in a peaceful garden to increase the food supply.

Vitamines.

Perhaps there has never been a time when housekeepers needed to study food values so carefully in order to feed their families wisely. For this reason I wish to talk a little more about vitamines, as I promised in a recent issue. In the first place, don't ask me to pronounce the word. Until some dictionary lists it you need not fear being called down for mispronunciation.

Very little is known about these interesting little vitamines altho it is certain they are not living organisms. But their function has been well established. To quote Dr. Wiley: "No matter how well foods are combined to secure a nutrition of all the tissues of the body equally, they fail to do this if vitamines are absent." Scientists surmised the existence of vitamines nearly a decade ago, but



it was not until about six years ago that any real work was done on them. One of the chief investigators, Casimir Funk, gave them their name, which is properly

a group name, as there are two well recognized types, and many scientists are inclined to believe there are more than two classes.

Vitamines are abundant in the outer layers of grains, especially rice; also in the yolk of egg, raw milk, fresh fruit, and fresh vegetables, especially peas and beans. Cooking is an important art, but certain foods when cooked lose their vitamines. The fact that they are found near the skin of the grain is one argument against the use of white flour bread, and for the use of brown rice instead of the white polished rice.

The absence of vitamines is probably responsible for certain diseases such as beriberi, scurvy, pellagra, and polyneuritis, as well as much ill health of a less definite sort.

Some raw or uncooked foods, therefore, such as lettuce, tomatoes, celery, fruits, nuts, and milk, should be used in order to supply these minute substances which are destroyed by prolonged high temperature, such as is employed in order to sterilize canned foods. They are also diminished, if not destroyed, by ordinary cooking, except in acid fruits and vegetables. It is true that only clean milk is entirely safe in an absolutely raw state, and that heat is usually needed to kill the germs. But this heat, even at the comparatively low temperature of pasteurization, has been found to destroy the vitamines that prevent scurvy. Orange juice should always be given to infants over one month old who are fed on pasteurized milk.

Vitamines are sensitive to alkalies, even such mild ones as baking soda, especially when accompanied by heat. Do not conclude from this that you should always use baking powder in preference to soda, as all baking powders are made by combining an acid with soda.

Vitamines are present in yeast. A company selling yeast makes the most of this fact in its advertising.

Fowls or guinea pigs fed on a vitamine free diet will become paralyzed in a very short time. Fed on rice polishings they will speedily recover.

Fowls fed on boiled polished rice show signs of beriberi in about 30 days. Similarly they show symptoms similar to pellagra from being fed on cooked cornmeal. But cornmeal corrects the beriberi symptoms brought on by polished rice. Experiments like the above are too well authenticated and too numerous to be doubted. Pigs are more susceptible to beriberi than man.

If yeast vitaminine preparation be given to pigeons paralyzed by lack of vitamines, they are relieved in one hour and completely restored in 12 hours.

Maybe some of you have noticed that health magazines which formerly advocated 10-hour cooking of oatmeal are now recommending that such cereals be cooked from 10 minutes to half an hour. I believe this is to avoid destroying the vitamines.

Now, after reading all this evidence about vitamines, aren't you proud to think that honey contains vitamines? It is uncertain to what class the vitamines in honey belong, and it is also possible that they are not present in any large amount.

For much of the above I am indebted to "How To Live" by Fisher and Fisk, to "Food Products" by Sherman, and to the Bureau of Chemistry, Washington.

Conservation Conversation.

Last month the printer, proofreader, editor, or possibly my own unruly fingers on my typewriter made me say "conversation" when I meant "conservation." If the same mistake is made again, it will give me the effect of stammering. If you think this "conservation conversation" is a little one-sided, remember a conversation with a lady is apt to be.

A few days ago I was talking with a domestic science teacher, an unusually bright and charming girl who is an enthusiast in her work. We were having a beautiful time, comparing notes as to our successes and failures with the new war recipes, when she suddenly said, "Oh, Mrs. Puerden, I envy you because you have a chance to experiment all you please. I have to try recipes in class and divide every ingredient into tiny portions so each girl may bake an individual cake, muffin, or loaf of bread." A few weeks before that another bright girl, who has been doing efficient work in an office for several years, said, "What fun you must have, Mrs. Puerden, testing recipes and working out new ones. I can't help envying you." I am passing these remarks on to other housekeepers because I believe we are a bit inclined to regard our work as drudgery. Some of it is, I admit, but there is drudgery in all lines of work, even gardening. Cooking is creative work, just as much as modeling or painting. What can give you a feeling of keener satisfaction than loaves of delicious bread and a baking of puffy drop cakes cooling in your kitchen? It adds much to the pleasure of cooking, too, when you have a family like mine with such healthy appetites that your successes and failures have to be labeled.

So many housekeepers say to me, "This war cookery takes so much time, it makes house-work so much harder." Perhaps it does take a little more time, but it is interesting to work with new materials, and if you cut out a large part of the cakes and pastries which you formerly used—you will never miss them if you have plenty of muffins, fruit, and hon-

ey—you will find it takes little if any more time.

Notice that, contrary to my custom, I am giving two muffin recipes which are sweetened. To be frank, I should not sweeten the rye muffins to please my own taste, but, as the bran muffins are used by many as a laxative food, the honey probably makes them more effectual for that purpose. You may think the amount of soda called for in the bran muffin recipe is excessive, but let me tell you something: either the combination of sour milk and soda behaves differently for me, or most modern cooks are not using enough baking soda to neutralize the sour milk and depend upon baking powder to help raise the mixture. Our mothers used a rounding teaspoon of soda, which equals two level teaspoons, for every pint of sour milk. The modern domestic science books usually estimate that a level teaspoon of soda is sufficient for a pint of sour milk, but after failing twice on that bran muffin recipe I increased the amount of soda to two level teaspoons, and the muffins were perfect with none of the bitter taste which is present if you use too much soda. Notice that I use the two teaspoons of soda in the johnnycake also.

Use all the potatoes you can for the next few months. There are many ways in which we can use them to save the needed wheat, and the use of potatoes is now considered a good way to neutralize an excess of acid forming elements caused by the use of meat, fish and eggs. Notice the two recipes calling for potatoes.

The tamale pie is good for the one dish meal.

HONEY BRAN MUFFINS.

1 egg	$\frac{1}{2}$ cups sour milk or buttermilk
2 cups bran	2 teaspoons soda
1 cup flour	$\frac{1}{2}$ teaspoon salt
$\frac{1}{2}$ cup honey	

Sift the flour to which the soda and salt have been added and mix with the bran. Beat the egg thoroly in the mixing bowl, add the honey and then the sour milk. Stir in the dry ingredients, beat well and bake in well oiled muffin pans in a moderate oven. This makes 12 muffins.

RYE MUFFINS.

1 egg	1 cup wheat flour
1 cup milk	5 teaspoons baking powder
2 teaspoons honey	2 teaspoons melted fat
$\frac{1}{2}$ teaspoon salt	
1 cup rye flour	

Mix and sift the dry ingredients. Beat the egg in the mixing bowl, add the honey and the milk and then the dry ingredients. Add the melted fat, beat and bake in oiled muffin pans about 25 minutes. The large amount of baking powder is because rye needs more leavening than white flour.

JOHNNY CAKE.

1 egg	$\frac{1}{4}$ to $\frac{1}{2}$ cup wheat flour
2 cups sour milk	2 teaspoons soda
$\frac{1}{2}$ teaspoon salt	1 tablespoon melted shortening
2 cups cornmeal	

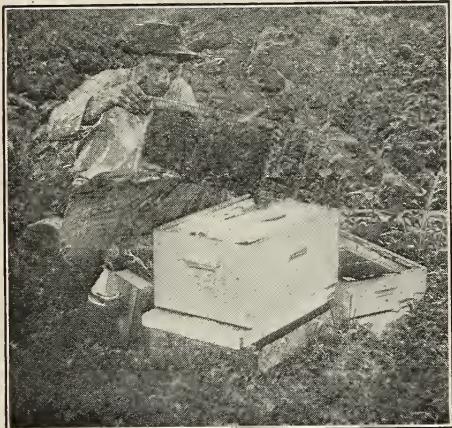
Mix and sift the dry ingredients, using $\frac{1}{4}$
(Continued on Advertising Pages.)

FROM Mr. Harry H. Cooper, a sideliner of Griswold, Iowa, comes another suggestion to beekeepers to help out those who have gone to the war. He is willing, he says, to do his bit to help anyone anywhere near him, and thinks if every beekeeper would do the same, many bee yards, instead of being sold, might be held intact for the return of their owners. The picture shows Mr. Cooper with a late swarm hived on full sheets of foundation. "Common" bees he calls them, so I suppose they are blacks, yet he says they are very gentle, and you see he is handling them without a veil.

Owing to American foul brood having gained a bad hold, his little apiary was greatly reduced last year, and he plans to build up this year by pound packages. Then he will

Beekeeping as a Side Line

Grace Allen



A late swarm hived on full sheets of foundation.

run entirely for extracted honey. Last year scale hives showed the best result from clover flow, running for comb honey, 12 pounds a day; the best from the fall flow, running for extracted, 15 pounds.

Mr. Cooper's remarks about the time he gives to his sideline are interesting, so I quote: "I am a telephone man by trade, and handle the bees as a sideline. I can handle a pretty fair-sized exchange and quite a bunch of bees, with a little help from my wife and working a little overtime. I figure on about one to two hours every day, with 50 colonies, and a little time at night when I feel like it."

Notice that "with a little help from my wife." Don't you think that sidelines that everybody can enjoy and help with are the very nicest kind of all? At our house, we like best to ride hobbies that carry double,

It is still a little early to report on the results of packed hives versus unpacked. Indeed, a complete report can be made only when the honey is harvested. But to date, the packed hives show up splendidly. For the first time I have had winter losses in my little apiary. One colony, not packed, perished and was robbed out. One (with a super of leaves and leaves on both sides) flying on Jan. 25, showed a month later a great heap of bees which had died only recently, and not a cell of honey in the hive—evidently a strong colony, starved. (Thought I was sure of stores, too.) A prompt testing of the others by the time-honored method of "hefting" the back of the hive revealed several colonies dangerously light. These were hastily examined, and one fed that very evening. Several others may need it later. Stores in general seem to be lighter than usual, and beekeepers here are hoping that what looks at present like an early spring will really prove to be one, and not get frost-nipped later. Today (March 9), the first bit of fruit bloom—the veteran old plum, that always leads the procession rather far in advance, being now in practically full bloom. But high winds are making it impossible for the bees to fly. Elm and maple came out unusually early; and one warm day in early February when I had been puzzling over the pollen that was coming in before I could discover any available source, the proprietor of a new near-by greenhouse informed me that we were in partnership, as my bees had taken possession of his place while the windows and ventilators were thrown open to the warm air.

* * *

It seems to me I have never seen so much young white clover. Town yards are full of it, and it is in constant evidence along the sides of the streets. Our walks are all punctuated with exclamations: "Just look at the clover here! and here! and there!" There may be many a slip, for all that we strive, 'twixt clover in spring and honey in hive, but it looks good right now and we're ready for the best that may come.

* * *

These up-to-date, progressive methods are rapidly taking hold in North Carolina. In one of his excellent circular letters to his bee club, County Agent Bruce Anderson of Winston-Salem tells them this little story: "I wish to bring to your attention the record of J. M. Weavil, Kernersville, N. C., illustrating the efficiency of bee-club methods. He transferred part of his bees into standard 10-frame hives in 1915. Two of these colonies were Italianized in 1916; one of them this year (1917) produced 140 pounds of honey and had no swarm. The other, with its one swarm, produced 140 pounds also. (His

black colonies averaged 68 pounds.) Mr. Weavil has now 11 colonies of Italians in 10-frame hives. These results were attained only by intense application." These letters of Mr. Anderson's are certainly to the point, concise, instructive, explicit, giving definite directions for work to be done at certain times. His directions for wintering must have helped many a beginner to carry his bees thru in good shape. Here is an extract from his circular of Feb. 25, 1918: "Your honey crop for 1918 depends on how your bees are handled during March and April. Each patriotic beeman will strive to produce the maximum crop. The three main features controlling your crop of honey are: (1) a queen in every colony; if any colony in your yard has no brood by March 10, give it a frame having eggs from your best queen; (2) at the same time see that each colony has 16 lbs. of honey or syrup; (3) see that each colony has plenty of room for surplus honey and for the queen to lay, before swarming time; have prepared by April 15 two or three supers for each colony."

A visit with Mr. Kenneth Hawkins, coming back from one of his long trips thru the South, is always an inspiration. Last month he stopped a few hours in Nashville, on his way north from a trip thru the Gulf States. He reported a discouraging amount of foul brood in Florida; but also told of enthusiastic meetings all along his line, waked-up county agents, the formation of a goodly number of girls' bee clubs, and constant instruction, followed by the gradual adoption of improved methods. Progress comes that way.

R. G. Kinney, a farmer near Fostoria, Michigan, is enthusiastic about bees as a side line. He has eighty acres right on the state road, only three miles from a good market town. "Farming," writes Mr. Kinney, "pays me well; but there have been

swarming. A 300-acre swamp within half a mile yields a succession of varied bloom that helps materially in brood-rearing and supporting the bees. Mr. Kinney's largest record was



Mr. Kinney has 125 colonies of golden and three-banded Italians.

in 1912—288 pounds of fancy comb honey from one colony. Winter losses run about 2 or 3 per cent. Twenty-five colonies are in chaff hives. These are wintered outside, and the others in a cellar where a temperature of 45 degrees is maintained.

As soon as the last issue of Gleanings arrived in this neighborhood, one Mrs. Dixie-Beekeeper called me on the telephone to protest against the statement in my department for last month that the so-called honey locust (*Gleditschia Tiacanthus*) yields no nectar for the honey bee. They have, or know, a honey locust, she says, that fairly hums with bees while in bloom. Then, what was worse, this disconcerting lady actually turned ABC on me, and there it was—honey locust is "one of the best honey-yielding trees in the United States." Now what shall I say next? And black locust not even mentioned—that is, in the main text (edition 1910). Dr. Phillips also lists honey locust as a source of nectar, but adds "much less important than black locust."

MY WISH IN SPRINGTIME.

I think that I would go quite mad
If day by tragic day
My every hour were crushed and sad
And there was no joy to be had
In any way.

The dread things that I read each morn,
They strike me to the heart
With dark dismay, or grief, or scorn.
Sometimes it seems each day is born
To add its part

To what has been so grimly told
Thru three long years,
While human hearts have grown so old,
So hurt and haunted, and too cold
For even tears.

But, God be thanked, once more the spring
Has brought us bees to hum;
And with the flashing of each wing
Within my heart shall something sing
That has lain dumb.

I wish the people all were wise
And lived among the bees,
And wars were done, and bitter cries
Were silenced under gentle skies
And cherry trees.



R. G. Kinney, Fostoria, Michigan, is a successful farmer beekeeper.

some years when my bees have paid me still better." Isn't that fine?

His apiary consists of 100 to 125 colonies, golden and three-band Italians. Having both eight and ten-frame hives, he finds he prefers the eight frames. Bees are worked entirely for comb honey; and when clover, the main flow, comes on, the hives are crowded with bees. They build up early, get into supers promptly, and give very little trouble by



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In Northern California—The College of Apiculture of the University of California recently issued circular No. 185 entitled "Beekeeping for the Fruit-Grower and Small Rancher or Amateur." Geo. A. Coleman is the author and in this work he has outlined in a brief manner a plan whereby a few colonies may be kept profitably. Mr. Coleman also points out the desirability of beekeeping on a small scale, not only from the standpoint of the honey that might be produced, but likewise that amateur beekeeping is of much value for the proper pollination of most fruits, some vegetables, and where alfalfa and clover are grown for seed. This circular is for free distribution and may be had by addressing the College of Agriculture of the University of California, Berkeley, Calif.

The beneficial rains during the latter part of February have assured at any rate a certain amount of increase. The rate of increase will be in proportion to the amount of late spring rains. Beekeepers should show no hesitancy now towards "more bees" during the next two months prior to their honey flow. Increased production is our duty. Winter losses in the Eastern States are said to be high, and we here must help to overcome as far as is possible the anticipated shortage in the East. It may also be mentioned that prices for this season's crop are expected to be as high (and perhaps higher) than those obtained for the crop of last year. It will be safe to assume that the number of colonies this season will be fully as large as that of last year, since this spring's increase will compensate for the loss thru disease, queenlessness and other causes.

During the past few weeks several thousand colonies have been moved to deciduous fruits, orange, mustard, and wild radish bloom. Should any beekeeper experience difficulty in securing an apiary site on the property of a deciduous fruit grower, let him show a copy of the March issue of Gleanings to the orchardist and point out to him the fact that some fruit growers are willing to go to the expense of several hundred dollars in order to avail themselves of a sufficient number of bees to pollinate properly their fruit bloom.

There has been active breeding throughout February and the forepart of March, which has resulted in many apiaries having from four to six frames of brood to the colony. In not a few instances drones were flying in March. During the above period consumption of stores was high, and there is some likelihood that bees may run short during inclement weather this spring. The above conditions, however, have not prevailed south of Stanislaus county, where very little breeding so far has taken place.

On Friday evening, March 1, the Los Gatos Bee Club held the most enthusiastic meeting

in its history. There were 70 persons in attendance. The principal speakers were Mr. Demuth of the Bureau of Entomology, Washington; and Mr. Coleman of the State University. The following day in the afternoon another successful meeting was held at Monterey. This gathering of beekeepers was not only large, but was also very representative of the county. Thru the efforts of Mr. Coleman, a county club was organized. The need for such had long been felt. Frank Henniken and Earl Hansen, both prominent beekeepers of the county, are taking an active part in the activities of the club, for both realize the necessity for a co-operative organization. The desire for collective action in this county is so strong that the club has proposed a meeting for March 16, with a special request that a representative of the California Honey Producers' Co-operative Exchange be present at the meeting. Monterey and Santa Clara County readers of Gleanings, who are interested in this movement, should get in touch with Mr. Hansen, Box 106, Sunnyside.

It must be gratifying indeed to the Promotion Committee (see March issue of Gleanings, under "Northern California") that so much enthusiasm has been shown amongst so many beekeepers regarding the California Honey Producers' Co-operative Exchange. The most important step taken by the Promotion Committee was that of securing the services of A. B. Massey of Fresno as their exchange organizer. For the past six years Mr. Massey has been engaged as campaign organizer for co-operative marketing associations. He conducted the campaign work of the raisin, peach, prune, and apricot growers, and it is common knowledge throughout the State today that these growers are organized into strong co-operative associations which have worked wonders for the mutual benefit of their members. Several thousand colonies have already been signed up according to the agreements of the Exchange, the approval of which amongst the beekeeping fraternity is everything that can be desired. Not only do many beekeepers respond readily to this co-operative work when approached, but there are also several instances where beekeepers, living in remote districts of northern California, have communicated with the writer to the effect that they wished to become members of the Exchange.

Modesto, Calif.

M. C. Richter.

* * *

In Southern California—Los Angeles County Club at a recent meeting elected Earl Shaffner, President, and W. H. Engle, Secretary. The club has been able to get a very satisfactory discount on all bee-supplies by buying col-


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lectively, and it promises to be one of the strong clubs of the State during 1918.

Riverside County Club held its regular monthly meeting Saturday, March 2, in the forenoon and the Neighbor Club of San Bernardino County held its regular meeting in the afternoon of the same day. Holding these meetings on the same date, but at different hours, makes it convenient for beekeepers to attend both meetings. A large number of beekeepers were in attendance upon both gatherings. An interesting talk was given by E. F. Atwater, Special Field Agent of the U. S. Division of Apiculture. Mr. Atwater is very desirous of helping the beemen in any way he can and urges them to call upon him for help with any of their problems.

Considerable disease is reported from districts where there was much melting down of combs during the hot wave of last June. Many report an apparent loss of vitality in queens and also some slowness about building up in colonies in these same districts. Evidently the loss of combs was not the only injury from that unusually hot weather.

The weather here up to Feb. 17 was almost like a continuation of summer, with scarcely a day when one could not open a hive for several hours with little trouble from robbing. Feb. 18, with but little warning, it began raining and continued at intervals until Feb. 27. The rains were general over the southern part of the State, and while some localities had much more than others, all have been greatly benefited. Parts of Santa Barbara and San Luis Obispo Counties had from 10 to 15 inches, while other districts in southern California got only from three to five inches.

While it is too early to predict the honey crop for 1918, most local beekeepers feel that some honey will be harvested. If the rains continue thruout the spring months, a good crop is possible.

Since the appearance of the auto truck, migratory beekeeping is becoming very popular in southern California. Some of the most successful apiarists move their bees as many as three times during the year. Beginning with the early winter months, they move to a locality where the bees get pollen and early honey from plants such as the willow, eucalyptus or pepper. This stimulates a colony to brood rearing and gets it strong and ready for the gathering of orange honey. Just as the orange blossoms begin to burst forth, whole apiaries are moved to the groves for a period of six weeks or two months. At the close of the orange blossoming season, some beemen move to the wild buckwheat and white sage ranges, and others move to the purple sage of upper Los Angeles and Ventura Counties. A little later the lima bean fields prove a great attraction to some. Beans are now grown over a large area, and the

acreage is increasing every year. While there are many varieties grown, the lima seems to be the only variety in this part of the country that produces sufficient honey to be of any benefit to the beekeeper. With the auto truck one can move bees from 30 to 50 miles in a few hours, while with horses it would have taken a day or two. With our fine concrete roads running over most of southern California, one extensive beekeeper told me it was just fun to move bees. I never found any particular fun in it, but it is certainly a satisfaction to know that you have the advantage of several different sources of honey. Climatic conditions and seasonal rain-fall enter so largely into the production of a honey crop here that the moving of an apiary a comparatively few miles often changes the balance from the loss to the profit side for the year's work.

More bees have been moved to the citrus groves than ever before and this year will certainly be a good time to solve the question: "Can our southern California orange districts be overstocked during the honey flow?" In some districts, beekeepers, who had locations almost to themselves and made fine crops, have this year been surrounded by nearly a thousand colonies within a radius of a few miles. It has been said that it is next to impossible to overstock the orange district during a good honey flow and now we will have a chance to know.

L. L. Andrews.

* * *

In Idaho—Climatic conditions in this territory continue favorable to the honey producer, the mild weather reported last month still being with us. We had a slight snow flurry about March first but this only remained an hour or two. The nights are cold, but after the sun is up for a few hours it seems much like late spring. The first robin of the year was seen the first week of March, and local papers report other spring birds in the vicinity. One honey producer reported his bees carrying pollen about March first.

Early reports indicate a very light winter loss in this section. A number of honey-producers who should know, say that a cursory inspection of their yards discloses a loss of less than 10 per cent. One producer near this city took advantage of a sunny day in the week of Feb. 24 to go thru the hives in his yard of 230 colonies and discovered a loss of only 15 colonies, or 6½ per cent.

A honey-producer of a near-by town in Oregon, in making up his questionnaire, asked for exemption from military duty until the coming fall so he might look after his apiary this season. Information is now had that he has been placed in subdivision C of class 2, and will probably not be called in 1918—possibly not for 15 months.

Coast buyers are insistent in their demand



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for both comb and extracted honey, calls for comb predominating. This condition is unusual, as that market has for two years drawn on southern Idaho for more extracted than comb. A strong winter demand for extracted was anticipated, owing to the fact that the Coast had such a limited quantity of extracted from this section last fall because of high prices; but such demand has not materialized. Buyers are now investigating for fall delivery, and seem disposed to offer a high price. One or two are making an effort to contract both comb and extracted for early fall delivery; but producers refuse to make such an arrangement.

The Idaho-Oregon Honey Producers' Association has completed an arrangement with the Idaho Food Administrator, R. F. Bicknell, whereby its Idaho members may secure, under a permit, sugar for feeding purposes. All purchasers will be limited to 80 per cent of normal requirements. This Association has also taken the matter of sugar up with the Oregon Administrator in the interests of its Oregon members, and will no doubt complete with him an arrangement similar to that made in Idaho.

Several apiaries in this vicinity are offered for sale by men, who, because of other interests, have been in the business in a half-hearted way. Prices quoted are high, with buyers scarce. One yard made up of mediocre hives and equipment is quoted at \$10 per colony.

The Idaho-Oregon Honey Producers' Association now has three cars of bee supplies rolling westward for distribution among its members. These cars contain about 100,000 lbs. of goods which will be supplemented by additional cars of stock goods later on. Indicative of the pronounced change from comb to extracted, the above cars contain a number of extractors and less than 70,000 sections as against 700,000 sections used one season before the demand for extracted became so strong.

Honey-producers are replacing the auto trailer and small truck body attached to the rear of the ordinary passenger car with regular auto trucks of the larger type. Several of these trucks have been purchased for use the coming season. It is becoming apparent that the trailer or small box truck is not suitable for men having several out-yards.

Caldwell, Ida.

P. S. Farrell.

* * *

In Iowa—The past winter has been one of the most severe and trying, from a steady-on-the-job point of view. The Iowa beekeeper who still persists in wintering his bees out of doors will undoubtedly have a new experience to add to his long list of the past. Just now, it looks as if the only safe thing to do, is to do the thing he really knows he ought to do—winter his bees in the right kind of a cellar. Dr. E. F. Phillips of the Depart-

ment at Washington told the beekeepers, at the National meeting at Burlington, that the so-called double-walled hive left to itself out of doors is about as much protection to a colony of bees as a sheet of newspaper would be if wrapped around them. After the Department has taken the trouble to expend much money and effort in discovering a fact, why should the Iowa beekeeper bull-headed ignore the statement and continue to winter his bees out of doors? Why go to school, and, after school dismisses, ignore the teacher's advice and teachings? Doing so does not alter the fact nor improve results. Some Iowa beekeepers are already finding many of their hives very heavy with honey and all the bees dead—frozen. Heavy stores did nothing for the bees this past winter with a steady zero weather pressing against improperly protected hives.

Iowa's State Apiarist, F. Eric Millen, and his coterie of assistants at Ames are doing a most excellent work over the State. Besides holding meetings with the beekeepers in their home localities, an educational short course of study has been arranged for the beekeeper to take at his home, at a cost of \$3 for the course, including two text books.

Hamlin Miller.

* * *

In Wisconsin—Half the ground is still covered with snow at this date (March 11) and large snow banks remain on the road side. Hard freezing continues at night. Maple-sugar bushes are beginning opened.

It is yet too early to report on the condition of bees in Wisconsin. Much the larger part of the bees in this State are still in the cellars. Many beekeepers report that their bees have wintered well, but will be short of feed in the spring. As the ground has been covered with snow all winter, the clover plants are looking fine. The soft-maple buds are good size, and on some early trees the buds are almost ready to open now. Bees outside seem to have wintered finely, and have had two good flying days.

There is an unusually large demand for bees this spring in Wisconsin.

N. E. France.

* * *

In Michigan—As usual, we are blaming the winter for our losses. However, the better beekeepers have not suffered losses much greater than normal except from shortage of stores.

Nineteen students took the short course, which includes beekeeping, at the Agricultural College this winter. The number was small but the seed sown fell on fertile ground. The results may therefore be great.

From the nature of the correspondence received during the last few months, there is to be a considerable investigation of the honey resources of Michigan by large beekeepers



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from other states. This State needs more efficient beekeepers and the territory is not so crowded but that many can find good pastures and sufficient room for expansion. The Agricultural College offers its assistance to those who contemplate changing their locations.

It is planned to hold county beekeepers' meetings during the latter part of March in Washtenaw, Wayne, Lenawee, Hillsdale and Branch counties. Beekeepers in those counties who do not receive notices of the meetings should send their names and addresses to the State Inspector of Apiaries.

The sugar situation seems to be improving very rapidly. From correspondence very recently received, it seems that beekeepers are finding it possible thru their letters of authority to secure considerable amounts of sugar, and, in some cases, enough to take care of the needs for spring feeding. However, some are unable to secure any sugar at all. In order to supply the needs of those who find that their bees are actually starving and are unable to secure sugar after trying in every way to secure it locally, a small quantity of sugar has been set aside for the use of beekeepers by the Food Administration. This sugar will be supplied as long as it lasts to those who must have sugar at once at the rate of 10 cents per pound plus postage. It is being handled at actual cost by M. H. Hunt & Son and the A. G. Woodman Company, but all remittances must be sent to B. F. Kindig, East Lansing, Mich. The sugar will be shipped by parcel post or express in lots of 20 and 40 pounds. If the cost, including sacks and packing, does not amount to ten cents per pound a refund will be made to the purchaser. Those living within reach of Lansing should come in person, bringing sacks with them. Please do not ask for sugar until you have exhausted every resource locally and until the time arrives that sugar must be secured to avoid starvation.

Last year the beekeepers of Michigan had the active co-operation of three of the county agents of the State. To date about 25 more have volunteered their services. The county agents want to help the beekeepers. Most of them have had little experience with bees and want the beekeepers to tell them and show them how they can give assistance. Get acquainted with the county agent; tell him your problems; take him to your bee-yard, and initiate him, if he is not familiar with the work; ask him to co-operate in the holding of field meetings; request him to furnish bulletins and literature to the beekeepers who are not using up-to-date methods. In other words, make use of the servant whose salary the beekeepers are helping to pay. Help the county agent to feel that, even tho he is not familiar with beekeeping, yet there is a particular service that he can render to the beekeeping industry. The coun-

ty agents want to be useful; but it is in general up to the beekeepers to show the agents how to help.

B. F. Kindig.

East Lansing, Mich.

* * *

From Ontario— It is too early to give a fair estimate yet as to condition of bees, stores, honey-producing plants, etc., but judging by reports at hand which are quite varied, would say that wherever colonies were strong, well protected, and, above all, had abundance of good stores, winter loss will be light. Just today I visited one of our own apiaries and found every colony alive and most of them looking well. This yard had considerable sugar fed and colonies were all strong. On the other hand, our home yard had mostly buckwheat stores and much of their stores consisted of heavy combs of buckwheat placed in the brood nest in the fall in lieu of light combs removed. I only did this as a matter of sentiment, as buckwheat was worth more than sugar, but I hated to buy much sugar for reasons that can be imagined. In this yard I find considerable dysentery and a number of colonies will perish before warm weather comes. This apiary is also exposed to the southwest and got full force of the great storm of Jan. 12 from that direction. After the storm was over, the ground was bare in most places and bees have been exposed to the unusual cold ever since. That may have aggravated conditions. A neighbor just half a mile from my home has 100 colonies and that same storm buried his bees all over. They have been covered ever since, and they are wintering finely. As they have buckwheat stores and the same kind of hives, it looks as if the greater exposure had caused poorer wintering with our bees here. Weak colonies are going out by wholesale. A man two miles from my place reported one-third dead a month ago. There was much natural swarming there last year, and I surmise his colonies were weak in bees and perhaps short of stores. Cellar-wintered bees are reported to be wintering well—in fact, the winter has been ideal for cellar conditions. Another man reports to me that he will lose a half of his 100 colonies. He had European foul brood in his apiary last year and many colonies were weak in bees when winter came on, and weak colonies could not stand weather like we have had ever since early December. Summing up as a whole, I predict that the losses among the extensive beekeepers who produce the bulk of the honey will not be nearly as heavy as was feared a few weeks ago. Much, of course, depends upon the weather of the next few weeks, as the bulk of the bees east of a line drawn north from Toronto have not had a flight at this date, Feb. 28. Heavy rains during the last few weeks have taken snow off the fields and covered clover with a solid sheet of ice. It would only be a guess to say how clover



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will come thru, but prospects are not improved by the snow leaving so early. As clover is our main standby, we know nothing at this date as to what honey prospects will be. As to stores, have had no reports and can only say that I believe our own bees have sufficient to see them thru. Where the bees have dysentery, stores disappear rapidly and those affected in my home yard may be short, but it makes little difference as colonies having dysentery badly as early as the end of February seldom amount to anything for they rapidly spring dwindle.

At this date, no appointment has been made to fill the position made vacant by the resignation of Mr. Pettit. It is to be hoped that when this appointment is made, that a worthy successor may be found to take Mr. Pettit's place. As near as we can figure out, it looks as if many men, whom the department think capable of doing the work, will not under any consideration accept the office; while, on the other hand, many whom the department do not think eligible for the job would gladly accept, if they had the chance. As I have no ax to grind, my sincere wish is that a man may be appointed who will be a real help to the industry, and that political pull (or any other kind of a pull) will not influence the powers-that-be to place any other kind of man in the position.

Much is said in March Gleanings about sugar for spring feeding. Canadian apiarists will be thankful that unless something unusual happens, they will not have to get sugar for spring feeding—at least, it will be their own fault if they do, as there was no sugar shortage in Canada at time fall feeding was necessary last year. Sugar is fine for winter stores, but only a last resort for spring use, as colonies in spring do not seem to be in condition to make the necessary chemical change in the sugar syrup, and they will not build up like they will on honey at that time of year.

February has given us welcome relief from the long spell of very cold weather prevailing thru December and January, by being fairly moderate so far as cold is concerned. As a climax to a winter of more than usual interest in many ways, there were heavy downpours of rain with lightning and thunder at different times during the last two weeks of the month. This rain coming on top of great banks of snow caused bad floods in many places, particularly in western Ontario. In a few cases, at least, stock and bees were destroyed by the high water. Some apiarists near here, including one of my own, had the water right up to entrances of hives, and I found it necessary to pry the hives loose and block them higher. Yes, they are likely to be placed higher another fall, and then the conditions of this spring are not likely to occur again for many years.

Some time ago I mentioned in these col-

umns that a well known wholesale man in Toronto was telling me of his intentions of getting a carload of honey from California for Ontario use. Only a few days ago I happened to meet him again and on inquiry as to where that honey was, he replied: "Oh, I got a chance to clean up handsomely on the car and it came no farther than New York City." Possibly it made up part of that big cargo that was so damaged, as mentioned in February Gleanings.

Honey is about off the market, and what little is moving, is quoted at 22 cents for white and 18 cents for buckwheat. That ought to be high enough to suit anybody, even the consumer, by the time he pays in addition, the wholesale and retail profits. Personally, I am among those who think that honey can be hoisted too high even for the good of the beekeeper, as it can get so high that people will think it is out of reach—in fact, they will begin again to class it as a luxury rather than a staple.

Markham, Ont.

J. L. Byer.

* * *

In Texas—There is yet much talk about how the bees came thru the winter. Revised reports have been necessary for two reasons. In those sections where excessive losses were inevitable, many beekeepers did not attend to their bees and the exact loss is hardly determined yet. It is thru such beekeeping methods that the loss of Texas will be made more severe than it should be. In some sections it has only been possible to ascertain recently if there is any winter loss of bees or not. In the extreme southern part of the State, the bees wintered well and have been at work long enough at this date to be good, strong colonies. In the Gulf Coast region, the loss has been excessive, due to exceedingly trying climatic conditions and neglect. The same may be said of the southwest section, but here the total loss in colonies will be greater because of the larger holdings. In the western section, the loss has been light where attention has been given; but where the bees were neglected the loss will be considerable. In the eastern section, the bees came thru in fair shape; but very short on stores. In the central section, the losses have been heavy, largely due to neglect, as the fall honey-flow was cut very short last year. In the northern section, the bees came thru in good shape and most of the colonies have stores enough to last until the spring honey-flow.

With bees starving in many sections and very weak in stores in other sections, it is interesting to learn the conditions of the honey plants. In the lower valley section, the plants are about normal and the bees have already done very well. In the coast region, the honey flora has suffered by the drouth of last year and the excessive cold of the past winter. Except in the locality of


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the southwest section, the honey plants are in very poor condition. In the western section, the honey plants (or native honey flora) are in poor shape, and dependence will be in alfalfa that is irrigated. In the eastern section, the honey plants are only in fair shape and they are much below normal in the central section. Prospects for the honey plants are good in the northern section.

At present the prospects for a honey crop are hard to determine and remain a mere matter of prophecy. Thruout the gulf section, the southwest and western sections, the prospects for a honey crop are not bright; but climatic conditions can yet change, in the form of rain, and much honey will be made. It is yet too early to speak much of honey plants over the remainder of the State.

With the unfavorable wintering and perhaps doubtful honey prospects, are many bees being offered for sale and are many being bought? But few bees are being offered for sale and there are but few buyers. Where losses have been many it would seem that many who have some bees left would want to sell them; but such does not seem to be the case. Many hesitate to buy any bees, with honey crop prospects uncertain. So many bees are without stores that they would make a very poor purchase.

Generally speaking, climatic conditions are improving and it is hoped that this month will see a decided improvement in the prospects for the year.

F. B. Paddock.

College Station, Tex.

In Florida—Prospects indicate that Florida will be on the map as a honey-producer this year. After the long cold winter, spring has come with a rush, and everything has put out the biggest bloom known for years. Orange trees, particularly, seem to be making up for their shortcomings of the last two years; but, unfortunately for the beekeepers, the blooming period will be of short duration and will be over before most colonies are in shape to do their best work. Usually the orange will begin to yield early in February and the flow continue until April. In 1914 we made more honey after Apr. 5 than before; but the bloom is unusual this year, and there seems no possibility of its lasting later than March 20. In this immediate neighborhood the flow started on Feb. 22, and with the abruptness of a logwood bloom—no honey coming in one day, and the next day the loaded bees dropping all over the yard. Weather conditions seem to be ideal for nectar secretion, and every bloom contains a good sized drop. Yesterday (March 3) I watched bees arrive at the grove, and observed that they visited four, three, and, in one case, only two blossoms, before departing with their loads.

Other sources of honey count for nothing when the orange is yielding so profusely.

The scrubs around here are full of andromeda in full bloom; but I have been unable to find a single bee working it. So our crop of orange honey should be of exceptionally fine flavor and command the highest price. What that price will be remains to be seen, but producers should go slow before selling for less than 20c per pound f. o. b. shipping point.

I have not yet heard from the pennyroyal section; but, if it has bloomed as heavily as the little of it here has done, there should have been some surplus from it.

Why is it so seldom that anything is heard about the Carni-Italian bees? I have kept three or four colonies of them for about six years, and every year that there has been a good honey flow they have so far out-distanced the Italians that it seems possible they may be especially adapted to Florida conditions. They have several characteristic advantages which are not possessed by the Italians. They are no more inclined to swarm; they gather very little propolis; cap their honey white; stay quietly on the combs during manipulation, but are cleared from an extracting comb in one-third the time that Italians can be.

By the time this appears in Gleanings swarming will be at its height, if not already over, and for the benefit of beginners and others who have not had Florida experience, let me warn them to hive no big swarms on starters or half sheets of foundation. The advice of one noted apiarist, in a book published on Southern beekeeping (and frequently given by others) is to the effect that big swarms can be put on starters because they are fitted for comb-building, and small swarms can be put on full sheets because it gives the additional help they need. This advice must be reversed for Florida during an orange flow. Never hive a good swarm on anything but full sheets of foundation, for otherwise you will surely have a hive full of drone comb. If you have neglected to order enough foundation, it would be as profitable to hive swarms in boxes or nail kegs and transfer them later.

Harry Hewitt.

Apopka, Fla.

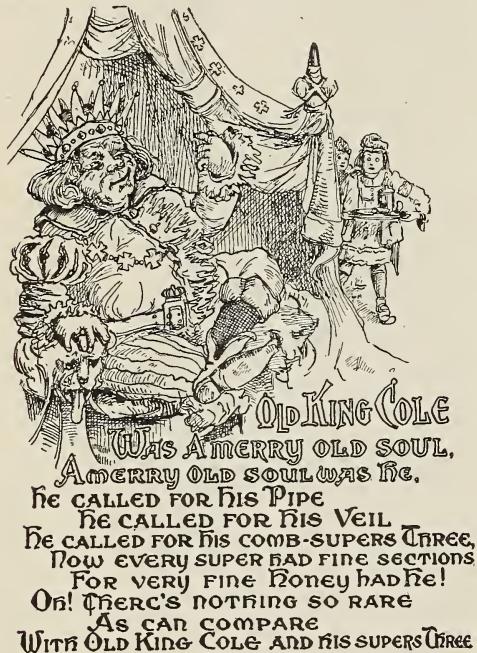
TO CONTRIBUTORS.

Gleanings in Bee Culture always wants interesting experiences of beekeepers, novel beekeeping sights or scenes, beekeepers' "short cuts," informing stories of successes and failures with the reasons why. Such articles, long or short, will be far more valuable to our readers if accompanied by photographs illustrating what is told. Such photographs should be black and white, sharp and full of contrast, and a glossy print if possible.

MANAGING EDITOR,
Gleanings in Bee Culture.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Mother Bee NURSERY RHYMES By M.G.P. (Mother Goose Plagiarized)



Shipping Honey to Soldiers at the Front.

Referring to Dr. Miller's note about how to ship honey to our boys at the front, it may interest many readers to know how I have been successfully doing it for a year and a half. My second son is fond of bees and just as fond of honey. So, when he took his place in the fighting line, I decided that he should not want for honey. Therefore once a month or so, I ship him a can among the other tid-bits the mother knows he likes. In the paint stores here varnish is often sold in a quart can that has a small screw cap. So I bought a lot of new ones at 10c each. To fill one, I warm the honey in the warmer above the cook stove, so that it will run freely into the small hole of the can. The Canadian limit of weight for packages to France is seven pounds, so I requisition a square cracker box which just holds nicely the can of honey and the dainties that make up the limit in weight. This box is wrapped in cotton cloth, which is sewn in position, making a package that brings rejoicing not to one boy alone but to all the boys around, for in the trenches the community spirit is strong. As parents, we have gone thru the agony of the fateful telegram "dangerously wounded

in face;" the weary waiting for more news for 10 days, trusting that no news was good news; then the joy of a hopeful pencil scrawl from himself. Since many who read this will, alas, have a like experience, let me assure them of one thing: the kindness and skill displayed by the doctors and nurses to our boys is almost beyond understanding, and the good folks of the town where the hospital is located do their utmost for other folk's sons.

Victoria, B. C.

F. Dundas Todd.

Condemns Home-made Hives; Wants Paint.

Home-made supplies, January Gleanings, page 26, may be all right for the other fellow, but not for me. I believe any one who is contemplating putting money into a home machinery plant, will not do so after he tries several brands of home-made hives. One's local mills have the necessary machinery, good workmen, and a willing spirit; but all, or nearly all, of the extensive beekeepers buy their hives from mills that make a specialty of such work.

For the last two weeks I have been "fixing up" hives which I bought along with the bees that they contained. Without an exception I have discarded the home-made ones and have kept under protest those that were made by the local mill. Next summer, when I need a hive, I want a good one—one that is accurately made to the 32nd of an inch; one that is square, and that will take a super without leaving bee cracks at end or side.

After working on these unpainted hives I am entirely unable to comprehend how a man as particular concerning details as is Dr. C. C. Miller always seems to be, can let his hives go unpainted. Locality? Well, an unpainted hive in this climate is fit only for kindling wood after two years of use.

Visalia, Calif. DeWarren B. Davis.

How That Snow Picture Was Taken.

The frontispiece for Picture Was Taken. March Gleanings is interesting to me for more than one reason. The apiary shown had been established in the previous spring, and on Jan. 1 following I took the train and went the 90 miles necessary to get there, so that I could see how the bees were wintering, as a card from a friend said they had had a heavy snow fall up there. This was my first season's experience with bees on the let-alone plan from October till the following April, without giving them a visit during all that time. It was very cold at the time the picture was taken. After digging down to the entrances of a couple of cases and finding a space cleared by heat from the bees, I decided to leave them alone. They wintered perfectly and never since have I bothered

HEADS OF GRAIN FROM DIFFERENT FIELDS

going to the expense of making a winter trip to look after them, and have lost all dread of anything happening by bees being covered up even for two or three months. Of course, I do not want any sealed covers over hives when wintering like this, for once in a while great loss might occur under certain conditions. The picture is also interesting to me because this was about the first time I had ever used a camera. Strange to say, the pictures taken at this time when I was absolutely green in all things pertaining to a camera, were among the best I have ever obtained—so much for luck and a fairly fool-proof camera. A companion picture to the one in question, was pronounced by Dr. B. N. Gates to be one of the finest winter scenes of an apiary he had ever seen, and, as I have already intimated, it "just happened." [This, too, was a remarkable picture.—Editor.]

J. L. Byer.

Markham, Ont.

Bees Make Use of a Bullet Hole.

While on duty east of Douglas, Ariz., one of my patrols reported it had found a swarm of bees in one of the international monuments which mark the U. S.-Mexican border line. Being interested in bees, I took the time to go down and see it and found that there was a nice swarm in the hollow part of the steel monument and that a bullet hole on the Mexican side was being used as an exit. Since the monument was near the Agua Prieta battle field, I concluded a bullet that had been intended for some poor Mexican's heart had missed its aim and had really done a good "turn" in making a home for a swarm of bees.

L. S. Halzwarth,
Captain 1st Ariz. Inf.

Naco, Ariz.

Queen-Breeders Nice People; Fumigation

To the credit of queen-breeders I should like to state that I bought half a dozen queens that arrived in poor condition, two being dead. I mailed to the breeder our postmaster's written statement of the condition of the queens, expecting, of course, to receive two more queens; but, to my surprise, I was sent six more. I think queen-breeders are a nice lot of people.

On page 793 it is stated that 4 ounces of bisulphide is sufficient for ten supers. From my experience, that is twice as much as is needed. It is also claimed that, in order to make sure of killing the eggs, the exposure should not be less than twelve hours. Texas Bulletin No. 158, pages 29 and 30, gives very complete data on the subject. For those who have not the bulletin I would explain, that, for ten supers, $\frac{1}{2}$ pound would not kill the eggs in 24 hours; but 2 ounces

for ten supers is sufficient to kill everything but the egg. All the millers would be killed in 20 minutes, and the rest in from one to twelve hours. The eggs hatch in ten to twelve days, according to temperature, and a second fumigation is necessary when the eggs hatch. One ounce is sufficient for 4.35 cubic feet of supers. Everything must be tight to hold the gas for twelve hours. This Texas bulletin is finely illustrated, and gives the best description I have seen of the remedies and life history of the bee-moth.

Hammonton, N. J.

C. E. Fowler.

A Long-Reach Swarm Grabber.

This illustration shows my "swarm grabber," a device for grabbing a limb or twig with a swarm of bees. You will notice the jaws are open ready for grabbing the limbs. The cord attached to the leverage part is then pulled taut and wrapped



two or three times around the handle at the handhole, when the limb may be cut with a fruit pruner. By using a long pole on the swarm grabber the operator may avoid stings and also be able to get clusters from rather high and inaccessible places.

Pataskala, O.

Henry Zinn.

Uniting with Honey;

In your editorial on uniting bees I see you don't always seem successful. Here is a good method by Alexander. Take half a pint of honey and pour part of it over the bees and tops of the frames of one hive and set the other hive on top of it and pour the rest of the honey over the

HEADS OF GRAIN FROM DIFFERENT FIELDS

frames and bees of the top hive. Put on the cover, and in one minute they will be too happy to fight. Try it on your weak colonies in the spring. You can even introduce a plurality of queens by this plan. It is the Miller smoke method without the smoke. Next winter when packing those big winter cases, just try one without packing, and over the entrances put doors to be kept shut tight when the weather is too cold for the bees to fly. I wintered mine that way —some packed and some not, and I can't see any difference. Both are No. 1.

Bellefontaine, O. Clyde Cordrey.

A Student's At the conclusion of
Ten Commandments the first half year's
of Beekeeping. instruction in apiculture
of California a little examination was given,

the tenth question in this examination being: "What are some of the things essential to success in beekeeping?"

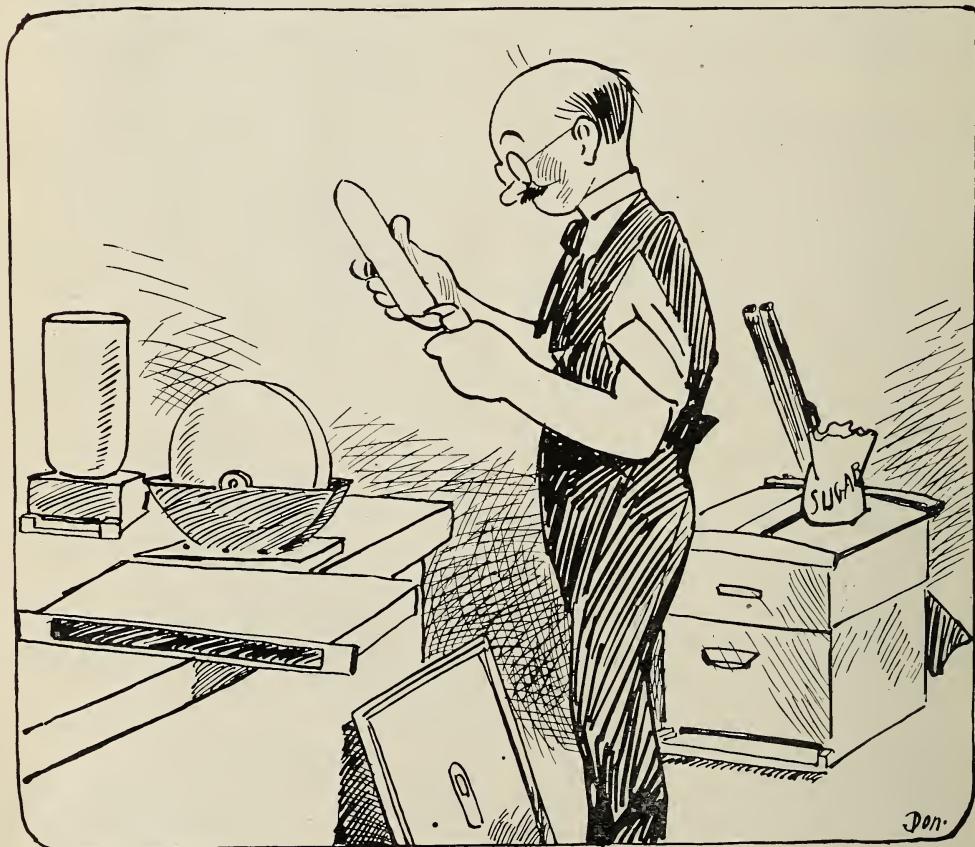
One of my students gave the following answer, which might be adopted as the Ten Commandments of beekeeping:

"(1) Good beekeeper (knowledge and dependability); (2) good bees (Italian); (3) good hives; (4) good bee pasture; (5) good equipment — smoker, hive tool, extractor, wax-extractor, storage facilities, honey packages and an enclosed place to work; (6) good apiary site, with wind protection, even temperature, and convenient; (7) honest, agreeable neighbors; (8) a love of the work; (9) a good market; (10) some other capital, or business, to tide one over a year of small returns."

I predict that he will be a successful bee-keeper.

Berkley, Calif.

Geo. A. Coleman.



THE BACK LOT BUZZER.

Andy Jimpson says he gave full instructions with the bees he sold to a beginner the other day, but the feller called him up by phone last night and said they arrived all right, but he had forgotten what was the next thing to do. Andy said there was only one thing he could think of, an' that was to send the money.

THE annual meeting of the National Beekeepers' Association held at Burlington, Ia., Feb. 19-21, was poorly attended, altho the program was excellent. The first session opened with only about 20 beekeepers present, and the largest number present at any session was 40. Prof. Francis Jager, president, opened the convention Tuesday evening, with an interesting address on the uses and functions of the national association. He had to leave the same evening to meet another appointment, and the convention was thereupon turned over to the skillful handling of C. P. Dadant, as temporary president. John C. Bull, secretary, was not present, so Hamlin B. Miller of Iowa was chosen temporary secretary. The regular program was taken up Wednesday morning, when J. A. Warren of The A. I. Root Co., representing E. R. Root, spoke on "Present and Future Beekeeping." Prof. F. Eric Miller of Ames, Ia., gave an excellent talk on "The State Agricultural College and Beekeeping in 1918." Dr. E. F. Phillips of Washington, D. C., spoke on extension work. His address and explanation of the Government's work in behalf of beekeeping elicited the keenest interest. E. D. Townsend of North Star, Mich., was not present, but sent a paper on "Some Proposed National Work for 1918." C. P. Dadant gave a very instructive address on "Making Honey a Staple." J. W. Stine of Burlington, Ia., pointed out in his address how the Government can help the beekeeping industry, and Geo. W. Williams of Red Key, Ind., sent a paper on "A Merger of All Beekeeper Societies." Harry Lathrop of Bridgeport, Wis., read a paper on "The Builders" and warbled a solo at the Wednesday evening session. At this evening session officers for 1918 were elected as follows: David Running of Filion, Mich., president; Hamlin B. Miller of Marshalltown, Ia., vice president; Floyd Markham of Ypsilanti, Mich., secretary; David Running of Filion, Mich., and Floyd Markham of Ypsilanti, Mich., directors. Thursday forenoon was taken up with the reading and discussion of a paper sent by Ira D. Bartlett of Michigan on "Standardization of Bee Supplies and Appliances." The subject brought out more lively discussion than any other considered by the convention. E. S. Miller of Valparaiso, Ind., sent a paper on "The Future of the National," as did J. H. Stoneman of Blackfoot, Ida., on "Making a Start with Bees in Idaho." Dr. E. F. Phillips, in the absence of Dr. S. A. Jones, chief of the Bureau of Crop Reports, discussed the work of this bureau as it affects the honey interests. The association passed resolutions to the following effect: appointing Dr. E. F. Phillips a committee of one to secure an investigation



of the vitamines contained in honey; endorsing the teaching of the uses for honey by high schools and state colleges; asking parcels post privileges for combless packages and commanding the work of the apicultural department of the Bureau of Entomology.

It is a little early to tell how bees have wintered thruout the whole country, but from a large number of reports received by Gleanings, all the way from Maine to California and Texas, we can say that they have generally come thru the winter in better condition than was expected two months ago.

Beginning in the East, New England generally reports heavy losses—50 per cent to 75 per cent of bees, and surviving colonies generally weak and short of stores.

Ontario reports heavy local losses, but the losses of bees well cared for not nearly so large as feared a few weeks ago. New York State reports bees in cellar having wintered very well, but from 30 per cent to 80 per cent loss of those wintered outdoors, loss being due largely to light stores or inability to reach stores. New Jersey reports 40 per cent colony loss. The southern and western counties of Pennsylvania have from 50 per cent to 75 per cent of bees dead; northern counties not quite so bad, having better winter stores. Virginia, North Carolina, Georgia, and Florida, while returning varied reports, seem on the whole not to have had unusual losses, while some sections report unusually good wintering. Southern Virginia, Kentucky, and Tennessee appear to have suffered severely (50 per cent to 75 per cent dead).

In the central North, the condition of bees seems to be unexpectedly good. Michigan reports conditions much better than expected, altho considerable feeding is necessary. Ohio's bees have come thru in very fair condition. Illinois and Indiana report bees having come thru fairly well—or better. Varying reports come from Iowa, Missouri, and Oklahoma—good and bad.

When it comes to the Rocky Mountain and Pacific Coast regions, the reports are almost all very favorable. Idaho and Colorado send word of excellent wintering with prospects for a bumper honey crop. Montana is taking interest and sends a good report, as do Utah and Nevada. With copious rains during late February and March, California sends word of excellent condition of bees and the prospect of a fine honey crop thruout the whole of the big State. Bees were storing honey in some California apiaries as early as March 1—and before.

Texas, too, sends word of the big drouth there having been broken by a substantial rainfall during the first four days of March, and bee prospects accordingly brightened.

"**T**HREE will be thousands of tons of the finest sweet go to waste in Indiana this year because there aren't bees enough in the State to gather one-third of the white-clover nectar there will be this season."—Boone Miles, Parke Co., Ind.

"I can say of A. I. R., 'whom having not seen I love,'"—A. Smith, Lamoille Co., Vt., Feb. 15.

"Would have sent sooner, only Job has nothing on me for poverty. No honey for almost two years."—Pat J. Dunphy, Elbert Co., Colo., Feb. 16.

"Gleanings is not as good as it used to be. I take it more for the advertisings now than for any other benefit."—Mont Wyrick, Dubuque Co., Iowa, Feb. 25.

"Gleanings is one of the most interesting, wholesome and valuable periodicals of which I know, and I would not be without it in my home."—A. M. Dewees, Grubbs, Del., Feb. 4.

"While we South Texas beekeepers have been thru the hardest times and the most severe drouth known, we are going ahead with what we have left."—M. B. Hinton, Karnes Co., Texas, Feb. 25.

"Our winter has been the hardest for about 20 years. We are expecting a good honey crop next season, as there was an abundance of young clover last fall."—Claude Barker, Jasper Co., Mo., Feb. 13.

"My experience with bee disease has been during the last six years, and it is —!—lots of trouble—you understand."—W. A. Losh, Butte Co., So. Dak., March 5. [We understand—you have put it very understandably.—Editor.]

"I do not like your paper the way you are running it now. We need more articles by big bee men and not so much talk between department editors. We have learned all they ever knew long ago."—V. V. Dexter, Kit-titas Co., Wash., Feb. 27.

"Bees carrying in pollen today from willow. No cold weather at all here. Buds pretty well out. Sorry for you fellows over the hills. Oh, yes, yellow jackets are plentiful at present. Never saw them at this time of the year before. Wish they were in the Germans' pants."—W. Stevens, Columbia Co., Ore., Feb. 9.

"When a fellow is trying to keep a few bees at his office two miles from home, and robber bees bother the colony with the Root queen in all the fall, and he puts them away for the winter, and in the severe weather the dead bees can be raked out from that hive by hundreds, and he wonders if they were queenless, and if they have been robbed of their stores, and then on Feb. 24, with the the-

BEES, MEN AND THINGS

(You may find it here)

mometer at 50, he trudges to the office with his last box of honey to feed them if they need stores, and opens the hive and finds great quantities of stores, and on a central frame he finds the queen with clipped wing and a bunch of brood nearly as large as his hand—oh, Man! Ain't it a Grand and Glorious feeling? (A la Briggs.)" L. L. Wheeler, Civil Engineer, Whiteside Co., Ills., Feb. 25.

"I notice in one of the Gleanings last fall you illustrated a cover punched with nail holes (10 lb. pail cover) as a feeder, and you advise beekeepers to punch these holes themselves. Why, my dear American people, we have had this feeder in use for four seasons, and this cover is supplied by a manufacturing company in Toronto already punched."—Jas. M. Patterson, Vinemount, Can., Feb. 5.

"I have been here in camp for a month now. The weather has been rather cool, and such beekeepers as I have had a chance to talk with have complained of the lack of rain and the lateness of the sage. The sage is being cleaned off around the camp here and has practically spoiled a good location. Raining here today. I am still a beekeeper."—Private Leland B. Davis, Co. C, 115th Field Signal Brigade, Camp Kearney, Calif., Feb. 22.

"I have handled bees on a small scale for many years. I had six swarms on a city lot close in during the past season, and five of these returned me over 550 pounds of honey. Could have sold every pound of it at a good price, but with the scarcity of sugar, the high price of spreads for bread, and a family of seven children, I find having the honey very fine."—C. N. McMillan, Woodbury Co., Iowa, Feb. 13.

"Glen Brothers, nurserymen of Rochester, N. Y., write me as follows: 'Butterfly bush, which is an exceedingly rapid growing bush, not described in our catalog. Its blossom has the greatest attraction for bees that we have ever seen. They literally settle on the blossoms in droves. In the rows of these bushes in our nurseries the hum of bees produces quite an audible sound.'"—Galusha M. Bache, M. D., Berkshire Co., Mass., Jan. 22.

"I had been bothered with rheumatism so much that many nights I could hardly sleep. I began to eat considerably more honey than I had previously eaten and I am bothered hardly any now. Of course, this proves nothing, but suppose you bring up the subject and inquire whether those readers of Gleanings that are eating a good deal of honey are ever bothered with rheumatism. I do not mean inflammatory rheumatism for which bee stings have been recommended. For in-

stance, ask such a man as Dr. Miller, who is as old as the hills and still young. Why not a world-wide propaganda be started 'Eat Honey and Cure Rheumatism.'”—Jas. Bachelor, Madison Co., Mo., Feb. 7.

"For the purpose of honey production we have found Maryland physically fit. While not up to the standard of the larger producing states, Maryland is nevertheless in the first rank of fine beekeeping regions. The climate is particularly favorable and the seasons last practically from April to the first of November. An abundance of nectar-producing plants, coming in the proper sequence, large crops of honey are assured."—G. H. Cale's address before Maryland State Beekeepers' Association.

"Lost all of my bees this winter with plenty of honey in each hive. The bees froze and scattered all thru my hive, showing that they were not clustered as usual in extreme cold weather. Think I lost them on Jan. 11, when it was 34 degrees at midnight and 12 degrees below zero in the morning. My theory is that it caught them scattered over the frames. About 90 per cent of the bees in this locality that I know of are dead, and were found in the same condition."—Chas. H. Rogers, Holmes Co., Ohio, Feb. 20.

Eleanor J. Kreitler, Practice Teacher, of the Kent, Ohio, schools had a score of her pupils write the A. I. Root Company regarding bees and beekeeping after the little students had been studying bees for a time. Here is one of their letters, typical of them all: "I would like to know something about beekeeping. I want to know how much honey about 4,000 bees can make in a year. How you keep the swarm in the winter time? How much you get from one hive in a year? I would like very much to have you send me a live bee. I would like to have a queen."

"I had eczema on my leg for five years. Doctor made it no better. Itch! Oh, my! It was spreading. I thought I would try binding on some honey. In a couple of days it itched so I took it off, and washed my leg with soap and warm water, and put some more honey on, binding it up again. In about a week it began to itch again. I gave it another good scrub and put on some more honey. It did not itch any more. I left the bandage on two weeks and the skin became nice and smooth. That was two years ago and the disease has not returned. I used the fall honey gathered from the aster and goldenrod. Whether that would make any difference or not I don't know."—F. J. Lee, Lee Valley, Ont., Feb. 18.

"Even tho you have great things over there, yet we obtain results here that would make Americans' mouths water. The year 1916 was a bumper year, when one of our members, with 16 hives, made a net profit of over £100 (\$500) from extracted honey.

. . . Foul brood and Isle of Wight disease possess no terrors for us. The proper

application of 'Bacterol' and a good queen in the hive is all that is required. I observed when the Isle of Wight disease was spreading over the country it followed the rivers, and we on the hills were the last to be attacked, and I suppose the first to be free. Look to the hills for aid."—Alexander Mackie, Supt. of Police, Marlborough, Wilk., England, Feb. 5.

They Say It Isn't So.

"And even John H. Lovell is just as far wrong in some of his sayings and doings. For instance, in January Gleanings, page 20, in his article on 'Bird Flowers,' two different times he mentions the fact that we have only one species of humming bird in the United States. This is very misleading to the young nature student, especially in ornithology, for any bird student of intelligence will tell you that there are about a dozen species of humming birds in the United States. The State of Maine has only one species, and that is the ruby-throated. Mr. Lovell must remember that the borders of the United States extend far beyond Maine. I must call Mr. Lovell's attention to the fact that the ruby-throated humming bird is the only member of the family Trochilidae inhabiting the part of the United States east of the Rocky mountains; but from the Rockies to the Pacific Coast and to the borders of Mexico, there are from eight to 10 other distinct species of this family. And Mr. Lovell's statement that there are 'more than 500 species in tropical America' is also highly exaggerated, and in about the same proportion as his statement that only one variety of Trochilidae inhabits the United States."—E. C. Davis, Saint Helena County, La., Jan. 21.

"Please do not think I wish to criticise John Lovell in his article, January Gleanings, on 'Bird Flowers Often Listed as Honey Plants.' I read the article with much interest. Yet I think he is in error when he states that the only humming bird in the United States is the ruby-throated. We have no less than 16 species in the United States. The ruby-throated may rule supreme east of the Mississippi river, but there are more than a dozen others that breed in California, Arizona, New Mexico and Texas.

. . . Do the birds get some honey from the 'bird flowers?' Last summer while the summer bee school was held in Dalton we went over the very fine gardens of Hon. W. Murray Crane's estate. The gardener, Herman Schmeiske, a man that it does one good to meet, showed us how the bumblebees gnawed into the cups of the "bird flowers" to get at the sweet secretion. The honeybees, far more numerous, would drink a "lion's share" of the nectar. I have seen the corolla opened, but do not know to what extent my bees work on such flowers."—Walter H. Leonard, Bristol County, Mass., Jan. 27.

QUESTION.—I have a ranch in the foothills of Nevada County, in which I am growing several thousand acidulous fruit trees, 80 per cent pears, the balance apples, peaches, plums, cherries, etc. How many hives of bees would you recommend for each thousand of such trees?

New York.

Answer.—The necessity of a large number of bees for the pollination of fruit trees is imperative, as may be clearly seen, when it is pointed out that the number of bees visiting the trees during the blooming period is more than 10 times as great as that of other insects. Most varieties of pears, and many of the apples and other fruits are self-sterile and are therefore placed in alternation in order to insure proper fertilization. When so arranged one colony per acre for an orchard of full grown trees would be sufficient, providing the weather was warm. But if a cold snap should occur at the time of fruit bloom, the bees would fly but a short distance, and several times as many colonies would then be a decided disadvantage. Some authorities on this subject plead for five colonies to the acre, saying that on the occurrence of unfavorable conditions, safety lies in the maximum number.

Question.—If in the first week of May, I divided a 10-frame colony into three, and filled the rest of the hive out with the full sheets of foundation, feeding them well, and giving each one a laying queen, would they store any surplus of honey this year and when would they become full colonies?

New York.

Answer.—If your heavy honeyflow does not begin before the middle of June, then by dividing your colony into two early in May and by feeding them for about thirty days, according to the Alexander plan of increase, you may be able to start the season with two good colonies instead of one, and therefore will increase your honey crop. If you divide the colony into three instead of two, you would still be able to obtain good colonies, but, of course, would decrease your honey crop accordingly. In some seasons it might result in the three colonies only obtaining enough honey to winter them and no surplus at all. In a good season they would probably store a little in excess of their needs.

Question.—I looked over an out-apiary Feb. 7, to be sure all had honey. I found the bees altogether too active for that time of year. All had brood as "large as a big hand," and from that up to four frames of brood in several strong colonies. In these colonies I found what looked like uncapped newly-stored honey in the super frames just above the brood. As there was, of course, no honey coming in, it must be that the bees took the thick honey, diluted it with water, and stored it where it will be handy to feed the brood. I never saw it done before.

California.

Dr. Warren B. Davis.

Answer.—We fear the above inference is hardly justified. That bees would dilute thick

GLEANED BY ASKING

E. R. Root

willow or some other early source.

Question.—Have you any information in regard to whether white or yellow sweet clover is preferable for honey production?

M. F. Cline.

Ohio.

Answer.—The white biennial (*mellilotus alba*), and the large yellow biennial (*mellilotus officinalis*), are both good honey plants. The latter, however, should not be confused with the small yellow annual (*mellilotus indica*), which is usually considered of small value. The large yellow sweet clover blossoms much sooner than the white, usually two or three weeks earlier, this difference in time depending upon the locality. It may thus be seen that in many localities this variety of yellow sweet clover is quite invaluable since it so nicely fills in the gap between fruit bloom and the main honey flow, thus encouraging continuous brood rearing just at the time of year when it is most needed.

Questions.—(1) Would it be a good plan to put pound packages of bees in hives from which the bees have been winter killed? (2) What size of package would be necessary in order to have a strong colony by June?

Joseph Langhammer.

Connecticut.

Answer.—(1) If the colonies were not diseased and simply died because of the extreme cold, their frames would be all right to give to other colonies, but we would hardly like to give such combs to pound packages of bees, since such a nucleus would be so small. We would consider it much better to give the combs of dead bees to good, strong colonies to clean out, after which they could be used in the way that you suggest. (2) In order to have strong colonies by June, it will be necessary to buy the packages early. If one- or preferably two-pound packages are purchased in April and each pound of bees fed slowly with about one-half cupful of sugar syrup a day, they may be built up into strong enough colonies to gather honey by June.

Question.—I should like to run my thirty colonies on the let-alone plan as far as I can and get a crop of honey. In the beginners' lessons in Gleanings last year, you say add another extracting body early, then about a week after the honey flow starts put the queen in the lower story with an excluder between. Now won't this colony have to be looked over to keep it from swarming? What I want is to get along without going thru them every week and then not see some of my best swarms soar away to the woods.

New York.

N. C. Davis.

Answer.—You seem to doubt whether the plan given last season in the "Beginners' Lessons" would work well as a let-alone plan. Well, so do we. In order to be certain that the bees will not swarm, it will be necessary

to look them over every seven or eight days. The let-alone plan is interesting simply as a freak plan that may have succeeded in a few rare instances. But under present conditions, when the health of each colony of bees is so important and the production of every possible pound of honey so imperative, we believe the practice is not only unwise but decidedly pernicious. See Allen Latham's own statement in this issue of Gleanings.

Question.—What is your opinion of E. W. Alexander's plan of taking the bees out after night?

Indiana. H. W. Suhre.

Answers.—If the bees are quiet and in good condition, then they may be removed according to E. W. Alexander's plan, that is, taken out at night, at a time when they will be unable to have a flight for several days. However, if the bees show any signs of dysentery or seem uneasy, it would be better to remove them on a warm, sunshiny day such that they may fly immediately. The colonies should all be removed at the same time, and, the entrances left contracted.

Question.—At what date do bees begin brood-rearing in cellars or outside winter cases?

Wisconsin. Elias Fox.

Answer.—If bees are given candy or for any other reason become disturbed and therefore unusually active, they may begin brood-rearing any time of the year, but normally not before March or April, in the Northern States. If brood-rearing starts before this, it is apt to cause dysentery, the occurrence of which at so early a date usually results in the loss of the colony. Some expert beekeepers by unusually early brood-rearing have been able to start the spring with quite large colonies, but for the ordinary beekeeper the practice is attended with a good deal of risk.

Question.—If combs that are left over winter have some candied honey in them, will the bees clean this candy out or will they leave it as it is?

Oregon. J. A. Pryor.

Answer.—If there is no other honey present, the bees will use the candied honey, but during the process will tear the combs and waste much of the honey. When feeding such combs of honey it will be found a great help to heat them. They should be uncapped, dipped in hot water, and placed in the hives while wet. If they are badly candied, then after dipping, the surface should be combed over with a stiff metal brush. But even with this provision there will be quite a little waste.

Question.—(1) How is a beginner to know when the bees have eaten what they have in the hive and are starving to death? (2) I want to introduce a new Italian queen this spring. In killing the old queen should I do so a week or so before I introduce the new queen? (3) And how shall I order ahead to get the queen here at the right time?

Michigan. H. E. Huey.

Answer.—(1) Usually we tell if a colony is running short by the weight of the hives. Of course, the beginner might not know whether a colony was short or not by merely lifting it. He can tell, however, by looking down between the combs and lifting out some of them. If the combs are dry and without

any stores in them except in a few scattered places where the bees are, it may reasonably be assumed that the bees are on the verge of starvation and should be fed, either by giving them candy or combs from some other colony that has perhaps died during the winter. Toward the last of this month, sugar syrup could be fed with safety. (2) If queens are introduced according to the directions sent with them, they may be introduced at the same time the old queen is removed. (3) There is no particular advantage in having the old queen removed several days ahead of time. In fact, it is a great disadvantage, especially so if the queen ordered should not arrive until a week or ten days after the colony had been dequeened.

Question.—Upon examining my colony recently I found all eight frames full to the brim and all capped, not a single empty cell. Could it be possible that they have a queen and the honey has crowded out the brood so she cannot lay; and, if I spaced in a few new frames of foundation, she would lay when they are drawn out?

H. P. Dixon.

California.

Answer.—The condition you describe is quite unusual, whether the cells are filled with honey, or with honey and brood. In either case, it is very seldom that all of the cells are capped. Since you are a beginner, we are wondering if you may not have confused the capped cells of honey with the capped cells of brood. The cappings over the honey are white, bluish white or yellowish white, rather irregular, and flattened somewhat. Cappings over the brood are composed of wax and fibrous substances, are light or dark brown, depending upon the age of the comb, and are rather smooth and convex. Of course if you find both of these kinds of cappings, then you will know that there must be a queen present.

Question.—I have about 50 empty hives that I want to fill with bees in the spring. How could I fill by dividing my 10 colonies. My idea is not to raise any surplus, but to increase my number of colonies as much as possible.

C. F. Hill.

California.

Answer.—In a good season, by continued feeding and careful attention, ten colonies may be increased to 50 but ordinarily no greater increase than to 30 would be advisable, for in order to withstand the winter, all should be good, strong colonies in the fall. During the present shortage of sweets, too much increase should not be attempted, at the sacrifice of the honey crop.

Questions.—(1) What do you consider the most successful treatment for European foul brood? (2) Please give the best method for introducing queens.

Fred Armstrong.

Answers.—(1) In the treatment of European foul brood some of our best authorities, including Dr. C. C. Miller and S. D. House, believe that dequeening for a period of only 10 days, and introducing a vigorous strain of Italian bees will cure in the great majority of cases. In the case of black bees or dark hybrids we would recommend a queenless period of 20 days. Before dequeening it is very important to make the colonies

strong by uniting or giving hatching brood. It is not necessary to melt up the combs or otherwise treat the colonies or hives as in the case of American foul brood. Cells from a vigorous strain of Italians can be given immediately after dequeening, as it will be ten days before the queen will lay. (2) The method given with the queen-cages sent out with the queens is generally successful for introducing. The smoke method as recommended by A. C. Miller also gives excellent results. But beginners sometimes fail in applying it properly; hence we recommend the cage method.

Questions.—(1) I have an opportunity to buy a small apiary of about 70 colonies of bees in rather good hives. What do you think is a fair price? (2) A great part of the time, I shall be on the road, and therefore unable to look after the bees. Would it be profitable to hire a man who understands them, to work on the farm and take care of my colonies? What wages should such a man receive? (3) Do you think it would be profitable for me to buy these bees or would it be a better plan to buy bees by the pound?

Russell T. Spencer.

Ohio.

Answer.—(1) Without having seen the bees or hives, it is very difficult to state a fair price for them. A colony will be worth anywhere from \$5.00 to \$10.00, altho all will depend upon whether the hives are modern, standard ones, upon the strain of bees, age of queens, the amount of drone comb, and whether the combs are criss-crossed. In buying, one should be certain the bees are not diseased. In general, we never advise beginners to start with a large number of colonies. It is far better to begin with two or three, and then gradually increase to the desired number. (2) Altho away from home so great a share of the time, it would still be possible to manage the bees yourself, if you could be at home one day in the week. We do not think that hiring another man to take care of the few colonies would prove satisfactory, besides we believe that you would enjoy the work yourself. As to wages, we cannot answer that question, so much depends upon the locality and the man himself. (3) We believe that the best plan would be to buy two or three entire colonies or else to buy three-pound packages.

ANSWERS BY C. C. MILLER.

Questions.—(1) What is the best way to transfer packages of bees to hives? (2) To help brood-rearing, had I not better pack the hives until the weather gets quite warm? (3) Do you use granulated sugar or brown sugar for syrup? (4) I have full sheets of foundation in Langstroth wired frames. I wish to increase as fast as possible with safety. Shall I be able to obtain increase by buying two-pound packages of bees, purchased not later than July 15? (5) What do you think of taking the queens away about June 15 so as to enable the full force of bees to gather honey, instead of a lot of them wasting their time feeding brood that will never be of any use to the beekeeper? (6) For the week or ten days that the queens are removed, why not use them in starting new colonies?

F. O. Donnell.

Minnesota.

Answers.—(1) Something depends upon whether or not you have at least one frame

of brood to give the bees. If you have not, then open the package sufficiently to dump out the whole of the bees at once. But it is very much better to have the brood. In that case no such large opening is needed, and you can trust to the bees to come out of their own accord. Put your frame or frames of bees in the hive at one side, set the package of bees in the hive beside the brood, with the opening toward the brood, cover up and let the bees take their time to come out. If there is not room in the hive for the package, set the package over the frames, opening downward, and set an empty hive-body over. (2) Yes, the packing will help if it is cold, but it's not very advisable to begin operations till it is pretty warm. (3) Only granulated for winter; at other times it doesn't matter. (4) Yes, if the season is good. If the season is poor you can partly make up for it by feeding. (5) Theoretically it looks like a fine scheme. Practically, at least in my locality, it has never seemed to be advisable to stop the queen's laying except when helpful to keep down swarming. (6) At any time when the queen is temporarily removed from her colony, it is well for her to be laying in a nucleus.

Questions.—(1) Would you advise the purchase of double-walled hives for this part of the country? I live in Illinois and have no bee-cellars. (2) Which is the better size section box to use, the $4 \times 5 \times 1\frac{1}{2}$ or the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$? (3) Would you advise me to use the shallow frames or the full depth frames for extracted honey? If I used the $4 \times 5 \times 1\frac{1}{2}$ section super and the shallow frames, the super bodies would be interchangeable. (4) Should I use starters or full sheets of foundation for section honey boxes? If so what style of a foundation fastener is the best for fastening the full sheets? (5) I have noticed in Gleanings that people having three-banded and leather colored Italians for sale each claims their's is the better. Which do you think is the better for me to buy? I intend to buy queens for divided colonies.

Gordon Bell.

Illinois.

Answers.—(1) I think I should prefer single-walled hives, using outside protection for winter. (2) I prefer the latter, as do most beekeepers. (3) There are advantages and disadvantages, either way. If you are going to keep only a few colonies, it may be well to have only full-depth frames; with a large number it may be better to have shallow frames. A good plan may be to try part of your colonies with shallow frames now, and that will help you to decide which you prefer to use when you increase your colonies. There would be some advantage, of course, in having interchangeable supplies. (4) Use full sheets, by all means; it will be money in your pocket. I am not familiar with all the fasteners, but the Daisy does excellent work. (5) I think the majority of beekeepers prefer the leather colored three-banders, and so do I.

Question.—Can I use paraffine for fastening foundation in frames?

Clyde L. Moore.

Pennsylvania.

Answer.—Paraffine melts at so low a temperature that we should much prefer to use beeswax for fastening foundation in frames.

IN our introductory talk of last month, we spoke of the essential outfit and also the smallest possible model equipment for one making a start with one colony. For purposes of manipulation and comparison some may prefer to begin with three or four colonies. If so, the suggested outfit will need to be increased accordingly. Also if one objects to heavy lifting and prefers shallow supers to the deep ones, twice as many supers will be needed.

The hive which we are recommending is a plain, dovetailed box without top or bottom. It is the lowest story of the hive and rests immediately upon the floor-board, which has at the front an entrance contractor for regulating the size of the entrance. At each upper



The smallest practical outfit for extracted honey production: 1 ten-frame hive body, wired frames with sheets of comb foundation; 2 ten-frame supers same as hive body; 1 floor board; 1 inner cover; 1 outer cover; 1 bee brush; 1 No. 2 bee-veil; 1 bee-smoker; 1 hive-tool. We suggest that the outfit be tripled.

end of this box or hive is a metal support, or rabbet, holding suspended lengthwise of the body 10 movable "Langstroth" frames, $9\frac{1}{2}$ by $17\frac{5}{8}$ inches in size.

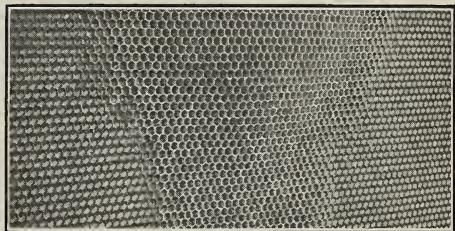
Inside of these frames attached to the top bar by means of wax and supported by sev-

TALKS TO BEGINNERS

By the Editor

eral horizontal lengths of fine wire, are full sheets of foundation, or beeswax stamped with an impression of the natural base and initial walls of honeycomb. Giv-

ing the bees these sheets of foundation, insures good straight worker comb centrally placed in the frames. During the honey flow new wax is added to these shallow walls and

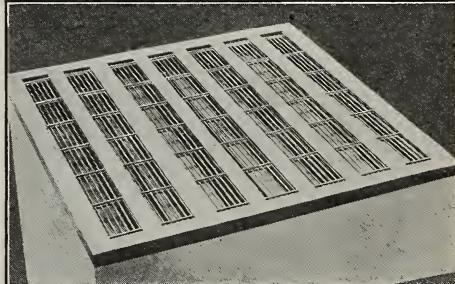


A sheet of comb foundation, the middle part of which the bees have begun drawing out into comb. thus the foundation is built out into comb for storing honey and raising young bees.

This lower hive is called the brood chamber because here all the young bees are raised, the queen being allowed to lay eggs only in the combs of this story. To prevent the queen from going above, a queen excluder is placed over the brood chamber.

The excluder is an arrangement made of perforated zinc, or of wire rods, which allows the free passage of workers but excludes the queen because of her larger size. This prevents the queen from laying eggs in the combs above, which are intended only for surplus honey.

Above the queen excluder the super is placed as soon as the bees seem to need room. The super may be exactly like the



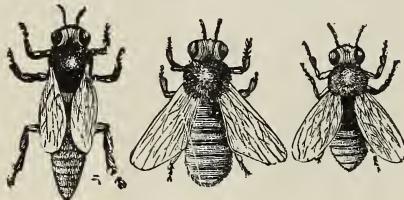
Queen-excluder separating brood-chamber from supers, prevents queen from going into supers and raising brood in the extracting-combs. hive body or may be shallower. It is used entirely for the storing of surplus honey, that is, honey in excess of the colony's needs for the coming winter.

The thin cleated inner cover is placed over

the super, or, early in the season, when no super is used, it is placed just above the brood chamber; and over all is placed the heavier outer cover.

Since we are attempting to describe a very cheap outfit, no mention has been made of an alighting board, but, of course, the hive bottom should rest on some support to keep it from contact with the ground, and a board sloping up to the entrance is quite a help to the bees as they return laden with honey.

The brood chamber itself furnishes the best opportunity for studying the bees since in this one apartment all the activities of the hive are conducted. Here will be found the three kinds of bees—queen, workers, and



Queen, drone and worker.

drones. Each is raised in its own peculiar kind of cell, and each has its own special work to perform.

The smallest bees in the hive are undeveloped females, known as workers. Of the inmates of the hive, these make up the great majority, there being from 25,000 to 75,000 or more in each colony. Their development from the depositing of the egg to the adult bee requires about 21 days. When first hatched, their bodies are covered with soft hair which gradually wears off as they become older.

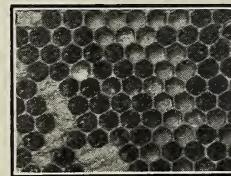
With the exception of the first day or two, their first two weeks are spent as nurse bees, in which capacity they partially digest pollen and honey and feed to the larvæ and queen, and also build comb and do other work about the interior of the hive. After this, they

begin gathering honey from the fields, leaving the house work to the young emerging bees. Altho workers may live over six months, yet during the busy season their length of life is quite short, only six or seven weeks.

Among the workers may often be noticed a few large, blunt, clumsy-looking bees. These are the male bees or drones, and are developed in 24 days from unfertilized eggs which the queen is able to lay at will. The drones are not as long as the queen, but are much stouter than either workers or queen. They have no power to sting or to gather honey, their sole function being the fertilization of the queen.

The largest, longest bee in the hive is the queen.. Her plumpness varies somewhat, being greatest at the height of her egg laying. After she has become mated she has a very sedate and dignified bearing and may be easily distinguished by this characteristic. A dozen or so of the bees nearest the queen often form a little circle, facing toward her and caressing her with their antennæ.

The queen cell in which the queen is raised is in shape and size somewhat like a peanut, or long slender acorn, with the smaller end hanging downward. As soon as the tiny egg in the queen cell hatches (three days), the nurse bees feed it "royal jelly," which is a concentrated, partially digested mixture

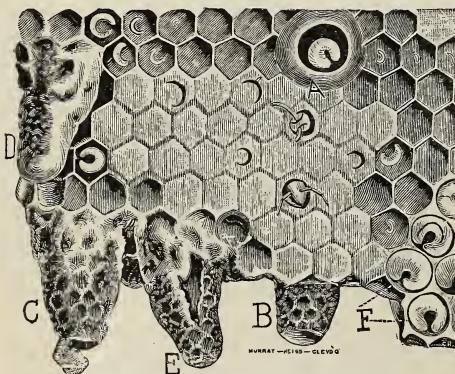


Capped brood in lower left corner, pollen above and at the right.

of honey and pollen. After feeding six days, the cell is closed, or "sealed," and on the 16th day from the laying of the egg, the queen bites her way thru her self-spun cocoon and emerges. After taking a little honey she tries to kill any queen present, and either she or the bees destroy all capped queen cells. In about six days she takes her wedding flight and a day or two later begins laying. During the height of the season she may easily lay 3,000 eggs a day. Queens may live four or five years, but are only at their best the first two years.

When glancing thru the brood chamber, around the outsides of the combs will be noticed cells about 1/5 inch in diameter, whose coverings, or cappings, are of white, yellow or bluish-white wax, and seem somewhat flattened in appearance. These cells contain honey which has been placed in a convenient position for feeding the young brood.

Just inside of this honey and toward the center of the comb may be noticed cells not capped over but containing a yellow, red, green, or perhaps dark brown substance. This is pollen which the bees have obtained from



At the center, hatching brood; above and at the right, cells containing larvæ in different stages of development; F, larvæ nearly ready to seal. B, C, D, and E, queen cells; B, partially built; C, one from which queen has hatched; D, capped cell; E, one with side torn down in order to kill contained queen.

blossoms and carried home packed in pellets on their rear legs. This pollen, or "bee bread," as it is sometimes called, altho used by the bees themselves, is gathered especially for feeding the young larvæ.

Here and there, at the corners or edges of the combs may be found drone cells which are regular in shape and slightly larger than the worker cells, there being about four cells to the inch.

Toward the middle of some of the combs will be found cells having light to dark-brown and slightly convex cappings made of



Bees gnawing thru the cappings and emerging from their cells.

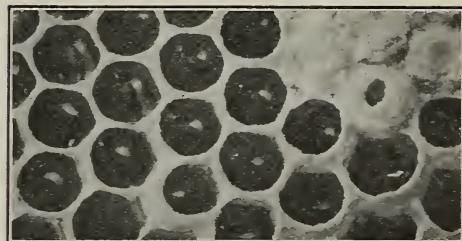
wax and fibrous material. Such cells contain the sealed brood; whether drone or worker may be determined by the size of the cells. Near this sealed brood will also be found unsealed brood, some cells containing tiny, elongated eggs of about the same diameter as a pin, others containing what appears to be pearl white grubs closely curled up in the cells. The latter are larvæ in various stages of development.

When given frames of foundation, the bees begin building comb and drawing out the foundation, providing there is honey or sugar syrup coming in. To produce each pound of wax used in comb building, it is necessary

for the bees to consume from 5 to 20 pounds of honey. For this reason foundation should never be given except when there is either a natural or an artificial flow, for otherwise it will be gnawed by the bees and probably ruined.

After feeding on these incoming stores, a secretion called wax issues from the wax glands and hardens into white scales, which may often be seen on the under side of the bee's abdomen. This wax is then transferred to the mandibles where it is mixed until it becomes pliable enough to use for comb building. Altho the new combs are very light in color, after several years of use in brood rearing, they become dark, almost black, from the thousands of bees continually tramping over them and also because of the many layers of cocoons which line the cell walls. These cocoons so add to the toughness of the combs that they make the old combs even more valuable than new ones.

In our next lesson we shall discuss the different methods of obtaining bees and also the ways of getting them into the new hives.



Unsealed, partially sealed, and fully sealed honey. which may be in either worker or drone cell. Capillary attraction prevents the unsealed honey from running out.



Rodolpho Garcia, Matanzas, Cuba, styles himself a beginner; but he has 200 colonies, and he secured an average crop per colony of 15 to 16 gallons of honey and three pounds of wax.

FOR many years I have read and admired the articles by L. W. Lighty in the *National Stockman and Farmer*; but it never even occurred to me that he was a friend of mine or even knew of my existence for that matter. I had an impression that he was in some way connected with the Department of Agriculture or with the farmers' institutes of the great state of Pennsylvania; but I did not suppose that such a busy man as he had time to bother with a bee-journal, much less to read my Home papers. While I think of it, one of the pleasant things all my life, and especially late years, is to come across somebody who has been a warm friend of mine for years past, and I did not know it nor even dream of it. Now, I value the kind letter below *ever so much more* because friend Lighty takes me to task, and points out to me some of my shortcomings. Here is the letter, without any further preface:

My Good Old Friend Root:—I have read your writings for more than thirty years because I think it worth while. This is not true of most stuff written. May I say a word and give a hint? You wish to get after the whisky business with the law, the club, the bars, and sword. I have a friend in Pennsylvania who believes in ruling by love. He has infinite faith in the promise given in Matt. 18:19. I know many cases where the husband was a drunkard, a sot, and terribly abusive when drunk. Home was hell when the husband was drunk. The wife went to this man of faith and asked that he heal this husband. I know quite a number who were thus healed and are splendid men who will not touch a drop of liquor. This man of faith is not some faddist, but a simple old Quaker farmer. His lessons (demonstrations) have been of infinite value to me.

The trouble with the world today is a lack of faith. The sword is to make the world "safe" and humanity humane. I really wish, my friend, you would give us a Home talk on the 19th verse of the 18th chapter of Matthew. You might also add Mark 7:30; then Mark 16:18 would also go with these. Brother Root, we are woefully lacking in faith. You so often, in your health talks, quote the authorities which change their methods annually. The wise and prudent are poor leaders, but faith reveals the truth, see Matt. 11:25 and Luke 10:21. I do not wish to pester you; but your words say you are not growing in faith.

As Advisor for the Department, I visited the institutional farms of the state and Reformatory No. 1, where the juveniles are sent, instead of to the regular prison. After going over the farm I went to counsel with the superintendent. He was a severely good man. He had faith in nobody, not even in himself. He was in an office with three heavy locks



In that hour Jesus rejoiced in spirit, and said, I thank thee, O Father, Lord of heaven and earth, that thou hast hid these things from the wise and prudent, and hast revealed them unto babes; even so, Father, for so it seemed good in thy sight.—
LUKE 10:21.

What boy would not try to "make good" after such a challenge?

Now I go to No. 2, at the other end of the state. I walk into the office of the superintendent and see no bars, lock, nor key. I meet a man with a wonderful smile—a man with infinite faith in humanity, having the same kind of "criminals" in his charge. They are all running "loose" over the place. Silent rules govern the place. Perfect order is everywhere. No one watches visibly anywhere. Every boy and girl (there are girls too) are on their honor. We go out over the farm, and see a tip of the cap and a salute for the superintendent on all sides, and from the superintendent a kind word to all as we go along. He even stops by a little group to inquire about a little colored girl lately sent in. Why, this doctor *loved* those "criminals" and they love him, and you could not bribe them to do wrong toward him. Here is where I saw with my eyes where faith "removed mountains."

L. W. LIGHTY.

East Berlin, Pa.

May I quote a little from the above? "The words say you are not growing in faith." I have added italics in the above quotation. *Why*, my good friend Lighty, if you have read my writings for more than thirty years you certainly remember the "fracas" with the boys climbing on the back of my automobile. I consulted the marshal and the mayor of the town, and they gave the boys a sound talking-to, telling them what would happen, etc.; but that, as it seemed to me, only had the effect of making the fun, as the boys called it, still *more* "interesting." But I finally began to see something along the line of what friend Lighty suggests. Instead of striking back I stopped and waited for the boys, and talked with them pleasantly and with a smiling face. At one time I told them to pile on all over my machine and see how many it would pull, and took the time to give them all, a little ride, even if I was in a hurry. That ended the trouble. I do not know but I had better add right here that I was considerably helped in the matter by the advice of the superintendent of the Sunday-school; and I think I have on past pages suggested that if *all* humanity could unite in returning *good* for

bolted between him and the outside. Locks and bolts and high formidable walls and bars were everywhere. When the boys went out to work, a man (well armed) took charge of six or eight boys. When one watcher took his eyes off his gang to show me something he called loudly to another keeper, "Watch my boys a few minutes," in the hearing of strangers and every one.

evil, we should soon see an end of the wicked war that now involves the world.

This Home paper is marked to come out in March, 1918—that is, if I do not send anything else to take its place; but I am dictating it on this last day of October, 1917. When this comes before your eyes, dear reader, I most earnestly hope and pray that no such “wicked war” as now oppresses not only the United States but the whole wide world will prevail. I do not exactly understand what friend Lighty would suggest; but he means, without question, that we should, each and all, strive for that spiritual elevation where we can honestly follow the Master where he said, “Love your enemies; do good to them that hate you; pray for them that despitefully use you and persecute you.” Now, the above works splendidly, as we all know, among friends and neighbors, and it ought to work splendidly for the whole nation and for the whole wide world. But as it appears to me, with the present state of affairs, taking conditions as they are, we must have law and laws; and if we have laws we must have law enforcement; and just now we have no other means at hand to enforce law than to arrest criminals by force. A

policeman must have firearms in order that he may stop criminals and arrest them; and when policemen are overcome, as they have been several times lately in our great cities, there must be a state militia backing them. If this state militia fails in its efforts to overcome thugs and criminals, then federal troops must be called on. What is to become of our great republic, “the land of the free and the home of the brave,” if the powers of darkness are not held in check? And I think that you, friend Lighty, will agree with me that the greatest enemy—yes, the supreme enemy—of law and order is the liquor business. When our nation shall have cut off its partnership with this piece of iniquity, then will our prayers be heard and answered, and God’s kingdom shall come and his will be done on earth as it is in heaven.

I have before suggested that that beautiful little text, “If I cherish iniquity in my heart the Lord will not hear me,” applies to nations as well as individuals. May God help us to learn the lesson that he is striving to teach us, perhaps by letting this wicked war go on until we are punished for consenting to be yoked with iniquity.



HIGH-PRESSURE GARDENING

“ WHATSOEVER A MAN SOWETH, THAT ALSO,
SHALL HE REAP.”

These articles on “High Pressure Gardening,” during years past, have, no doubt, been very helpful to many, as I have gathered from abundant testimony; but I feel sure I have something for you, dear friends, this morning, that may, thru a kind Providence, eclipse them all.

I have been reading about the measures our nation is now taking to have *better seed corn*, the world over, I hope and pray. Well, it rejoices my heart to read about the tests our “school children” (God bless them and their teachers) are making—a kind of “schooling” that to me seems far ahead of Greek and Latin (to say nothing of German, just now). Well, what Hoover and Garfield are doing to have a hill of corn on every spot where a hill *should be*, I am doing; and I am teaching how to have a hill of *potatoes* on every spot of prepared soil, where a hill of potatoes was intended to be.

Get your potatoes, a kind that has proved a success in your locality, and cut them to one eye, on the Terry plan. Leave two eyes

as you choose; but I have had splendid sprouts when I could not discover *any* eye. It is a very good plan to have a pretty fair sized piece of potato to each eye, but this winter I have had some immense potato sprouts, and later, vines, from a piece of potato not larger than a nickel, and not much thicker than a potato paring. It all depends on the soil in your hot-bed or cold-frame. When this comes before your eyes, you likely will not need any hot-bed or cold-frame either. Get a spot where you can get as much sun as possible, and have it, at the same time, sheltered from north and west winds. Have plenty of water near by. A spot, a rod long and six feet wide, will do for most of you, probably. Spade, hoe and rake this ground until it is fine and mellow for a foot deep, or more. Now comes the most important part. Make the ground *rich*. Use fine, old, well-rotted manure, plenty of it, or whatever you know of, that gives crops in your locality. In our beds here, we use a pailful of fertilizer, especially for potatoes, and another of goat or sheep manure. Work it in very thoroly. Shovel

the soil back, level it off and place your one-eye pieces of potato about two or three inches apart. When nicely placed, shovel about two inches of soil over all. (I forgot to say that this bed must be tile-drained, or good drainage secured in some other way.) While the bed should be kept pretty wet, there must be no standing water during heavy rains. Get all the sunshine on this bed possible; if there is anything in the way that shades, either morning or evening, get it out of the way, if possible. If the nights are at all cool, cover the bed with empty sacks as soon as the sun is off at night; but be sure they are off as soon as the sun can get on the bed in the morning.

Will every piece of potato produce a good, strong shoot with this treatment? Of course, it won't. And it is just here, where my great invention comes in, that is going to save the world *millions*. When your potato bed is pretty well covered with green leaves, run up a wheelbarrow, with light, wooden trays, and lift out the plants, potato and all, with not only a great bunch of branching roots, but also with a good handful of this rich soil. The bed should have been thoroly wetted an hour or two before you commence lifting the plants. To have them come up easily, push a flat-bladed spade down under the roots; then pry down on the handle and this will loosen the whole "sod" of potatoes and roots, so you can carefully separate them. Before doing all this, your potato ground is to have been well prepared and furrowed out. If you can run a hand-cultivator thru each furrow just before setting the plants, it is better.

Now to go back a little to the "great invention." Every piece of potato that has not made a good plant, is to be put back in the bed, and taken up at a later date. These "put-back" pieces often make the very best plants.

Now a word about having the hills just so far apart. We have the furrows 30 inches apart, and aim to have a potato hill every 16 inches. Well, my good helper Wesley didn't seem to have the faculty of guessing at 16 inches, so I gave him a 4-foot lath, with notches cut at the 16-in. point. With this near by, he gets them almost exact.

What do we secure with all this "fuss and bother"? A lot of things. Not only is there a good, strong plant and no missing hills, but also you have a yield of great, beautiful potatoes that command a big price, when there are often no new potatoes on the market at all. One who has not tried it can scarcely realize the difference. Just now the world is beginning to recognize the great importance of giving the young plant (or

animal) a good, healthy start during the first period of its existence. Visitors are coming every day and you ought to hear their exclamations of surprise. One lady begged for some potato *leaves*, as she said she never saw, or heard of, anything like it.

After showing some friends a beautiful bed of potatoes, that had just been cultivated and hoed, I made the remark that they had been planted just *one week*. The crowd turned and stared at me just about as people did 40 years ago when I announced I had taken "a barrel of honey" from one bumblebee in one summer.

Some of you may think I plant potatoes pretty close. Well, I have found it an advantage here to have the vines cover and shade the ground from the hot sun as soon as possible. By the way, I have grown Red Triumph potatoes on this same ground now for six or seven years. Not only that, but my crops get better and better, by planting velvet beans after the potatoes and spading them under every fall.

A year ago, I sent to our Florida Experiment Station, and also to our Ohio Station, an account of my potato work, similar to the above; but neither seemed to think very much of it. Perhaps after a while they will both "sit up and take notice."

P. S. I use about one-half ton of special potato fertilizer per acre.

THE WIND-ELECTRIC APPARATUS DOWN IN FLORIDA AND ITS PROGRESS UP TO DATE.

So many are interested in the matter of "harnessing the wind" so as to have it pull our automobiles, do our house-work, etc., that we print below some of A. I. Root's daily reports of progress, as he has jotted them down on his letters written to Medina:

Feb. 16.—We are still waiting for Marukoski to boss raising the heavy wooden tower.

Feb. 20.—Business matters hindered the inventor, Mr. Marukoski from making his trip to Florida so our machinery is not yet set up. The wood tower is completed and nicely painted, but not yet raised on its feet. Today is Feb. 20, and Mr. M. is expected on the 25th.

Feb. 22.—Better send me one more \$100, as we are going to set up the windmill next week. I expect I have been using a lot of money, but I hope a part of it has been "treasures laid up in heaven, where thieves do not break thru and steal."

Mar. 4.—Our generator is finally at hand and the switch board is to come by express. Our troubles for the present at least mostly over. Marukoski is to be here tomorrow. The generator weighs 400 pounds so I think

it must be a low voltage, altho they have never told me direct, I think that will please me best. We shall not want to send current any distance.

March 6.—We expect Marukoski tonight. It is pretty hot here now and no rain.

March 7.—Marukoski is here, and a *great big* man he is, physically, mentally, and I hope, spiritually. He is away up on electricity, is prominent in the Y. M. C. A., and it is a great privilege to know him.

March 9.—Mill is running and takes so little wind. A scrap of paper dropped from the tower fell almost straight down to the ground but the mill was run by even so light a wind as was then blowing. Roller bearings and everything balanced, like a fine steam engine, is the secret of it.

March 11.—At 2:30 p. m. on this 11th day of March, our electric windmill started whirling, and is now, while I write, charging the 28-exide storage batteries on my electric automobile. Providentially we had quite a brisk wind when we were ready for the test, altho it was quite gusty and is almost constantly changing direction. The result is that the ammeter shows 5 amperes, then 10, and once in a while goes up to 20; but this uneven rule seems to store the battery all right. The automatic switch board is to be installed later. May the Lord be praised for our success so far! The great 14-foot wheel, with the belt on its outer rim, makes at present only about 18 revolutions per minute, and it runs so quietly on its roller and ball bearings that not a sound is heard even with your ear pressed against one of the timbers of the tower.

POTATOES AND BEES DOING FINELY.

My potatoes, all planted since the freezes (by the "hot-bed" method), are now (Feb. 20) covering the ground with their great, rank, green foliage in a way that gives promise of a wonderful crop. For a brief period every morning the bees are tumbling in loaded with honey, probably from the orange blossoms.

SELLING THE RED TRIUMPH POTATOES.

March 10.—Today we began digging some of the potatoes, which were not out of the ground so as to be injured seriously by the freezes during the winter. I took a half-peck basket to my good friend Burnet at the grocery store and asked him what he could pay for such.

"Mr. Root, what do you want for them?"

I said, "I thought they ought to bring 35c."

"We couldn't make it," he replied.

"Well," said I, "you give me 30c, and sell them at 35."

"All right," said he, "bring them along."

I went home and started Wesley to digging, while I sorted and placed them in baskets and ran them up town. I did not know it at the time, but it seems that on account of the bad weather there wasn't a new potato in Bradenton. They were grabbed up almost as fast as I could unload them, and every basket sold was carried around to let people see "the beautiful potatoes." One of the crowd said: "Why, Mr. Root, how is it possible you can grow such fine potatoes every year, at a time when nobody else has new potatoes of *any kind?*"

I replied: "My good friend, I have been trying to grow more and better potatoes, more or less, for full 70 years.

This year there are fewer small potatoes than ever before. The secret is the "single-eye" plan given the world by our lamented friend, T. B. Terry. Each potato hill, as a rule, is one great thrifty stalk, and the result is, all large fine potatoes.

After we had delivered 30 or 40 baskets, that were grabbed up almost as soon as unloaded, Mr. Alderman (one of the firm) said: "Mr. Root, we are sending a truck down to your place with some corn and middlings for your chickens, and I wish you would have a lot of potatoes ready, and, if possible, load up the truck with them."

Now, dear friends, when this reaches you, you can "get busy" and do something similar, right near, and in *your own home town*.

DASHEEN TUBERS FOR PLANTING.

In reply to many inquiries, you can get dasheens for planting of The Kilgore Seed Co., Plant City, Fla., and their seed catalog will give you a lot of information about everything that can be grown in Florida with profit. Dasheen will grow *anywhere*, but, of course, it doesn't come to full maturity away up north. As it is good food, however, at every stage of its growth, roots, leaves, and all, I think it pays to plant it. Send to the Agricultural Department at Washington, D. C., for pamphlet, if you want to know all about it.

IRON AGE

Farm, Garden and Orchard Tools

Answer the farmer's big questions: How can I grow crops with less expense and labor? How can I grow fancy fruit at low cost? The

IRON AGE Barrel Sprayer

No. 190

(horizontal) solves the spraying problem for the busy farmer. Can be used in any wagon, cart or sled. Reliable easy-working pump placed outside the barrel—prevents rusting all parts easy to reach. 100 to 125 pounds pressure with two nozzles. 50 and 100 gallon sizes. We make a full line of sprayers. Write today for our free booklet.

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Classified Advertisements

Notices will be inserted in these classified columns for 25 cts. per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Beeswax bought and sold. Strohmeyer & Arpe Co., 139 Franklin St., New York.

FOR SALE.—30 cases comb honey, mixed lot. What are we offered?

H. G. Quirin, Bellevue, Ohio.

40,000 lbs. of No. 1 clover honey; 7,500 lbs. of white aster honey; both of good color, fine flavor, and good body. W. B. Wallin, Brooksville, Ky.

FOR SALE.—900 lbs. Orange blossom honey and 120 lbs. white clover at 18c cash with order. James McKee, Riverside, Calif.

FOR SALE.—White Montana Honey in new sixty-pound cans. Twelve Dollars per can. Six pails, each ten pounds net per case, \$12.60. Six pails, each ten pounds gross, \$12.00 per case. Immediate shipment. B. F. Smith, Jr. Fromberg, Mont.

HONEY AND WAX WANTED

Small lots of off-grade honey for baking purposes. C. W. Finch, 1451 Ogden Ave., Chicago, Ill.

WANTED.—Comb and extracted honey. J. E. Harris, Morristown, Tenn.

WANTED.—Honey and beeswax. Send sample and price. C. S. Fryer, 386 Halsey St., Portland, Ore.

WANTED.—To buy a quantity of dark and amber honey for baking purposes. A. G. Woodman Co., Grand Rapids, Mich.

BEESWAX WANTED.—For manufacture into Weed Process Foundation on shares. Superior Honey Co., Ogden, Utah.

WANTED.—Extracted honey in both light and amber grades. Kindly send sample, tell how honey is put up and quote lowest cash price delivered in Preston. M. V. Facey, Preston, Minn.

BEESWAX WANTED.—We are paying higher prices than usual for beeswax. Drop us a line and get our prices, either delivered at our station or your station as you choose. State how much you have and quality. Dadant & Sons, Hamilton, Illinois.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

BASSWOOD AND EVERGREEN TREES.—Send for list. Hansen Nursery Co., Niles, Mich.

FOR SALE.—30 shallow extracting supers with drawn combs. Oscar Carlson, Sandwich, Ill.

FOR SALE.—Two story 10-fr. hives in any quantity. Write Lock Box 202, Grand Rapids, Wis. 1002

FOR SALE.—West's cell protectors and cages at half price. James McKee, Riverside, Calif.

FOR SALE.—Pure maple syrup in one-gallon cans at \$2.50 per gallon. Six gallons or more \$14. The M. C. Silsbee Company, Avoca, N. Y.

Beekeepers, let us send you our catalog of hives, smokers, foundations, veils, etc. They are nice and White Mfg. Co., Paris, Tex.

FOR SALE.—30 Danz. hives with drawn combs, and section supers. No disease. C. T. Thompson, New Glasgow, Va.

Everybearing Strawberry plants, Progressive and Superb, by Mail, prepaid, \$1.00 per hundred. R. H. Norman, Black River Falls, Wisconsin.

FOR SALE.—One 6-in. foundation mill, in perfect condition; also one 400 chick Paradise Cyphers brooder, good as new, reasonable in price. E. M. Shirk, Wheeling, W. Va.

Pennsylvania Distributors for Root Bee Supplies, save time and transportation expense on all standard hives, sections, etc., at catalog prices. Prothero, Bailey & Goodwin, Dubois, Pa.

FOR SALE.—25 8-frame comb-honey supers for 4 1/4 plain section with section-holders and fences, nearly new. Also roll of corrugated paper for shipping-cases. R. D. Mills, Highland, Mich.

FOR SALE.—Used honey cases, 2 60-lb. cans good shape, 75c each; 5-lb. honey pails, new, \$9.50 per 100; also 1-lb. glass honey jars, \$.90 per gross. D. H. Welch, Racine, Wis.

NORTHWESTERN BEEKEEPERS.—Order Root's Supplies near home and save time and freight. Geo. F. Webster, Valley View Farm Apiary, Sioux Falls, S. Dakota.

WAX PASTE FOR LABELS COSTING LESS THAN A PENNY A PINT.—Send 25 cents for formula for paste for labels that will stick anywhere. Money refunded if not satisfactory.

Sunnyside Apiaries, Fromberg, Mont.

Southern beekeepers, save money on comb foundation. Send me your beeswax to be worked, on cash or on shares. Terms the lowest, and satisfaction guaranteed. Send for terms.

E. S. Robinson, Ft. Myers, Fla.

THE ROOT-CANADIAN HOUSE.—73 Jarvis St., Toronto, Ont. (Note new address.) Full line of Root's famous goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—Honey extractor, solar wax-extractor, supers with Langstroth shallow frames and clean bright combs, frame-bucket, uncapping knife, wooden honey-boards.

Evans E. Ewing, Rising Sun, Maryland.

FOR SALE.—Standard size dovetailed, ten-frame body filled with full drawn combs on Hoffman frames, built on full sheets of foundation and wired frames, \$2.00 each. Ideal supers to match full drawn combs, \$1.25 each. The Hyde Bee Co., Floresville, Texas.

FOR SALE.—Two typewriters. Latest improved Blickendorfer in leather carrying case. Never used. Cost \$55. Price \$20. L. C. Smith & Bro., No. 2, second-hand but in good working order. Cost \$100. Price \$20.

L. W. Lighty, East Berlin, Pa.

FOR SALE.—One thousand bee hives with supers. Three-fourths dovetailed. Balance halved together at corners and nailed both ways. Hoffman frames throughout. We will guarantee them to be sound and free from disease. Will sell all or any part at about one-half what new hives will cost. Apply to The Hyde Bee Co., Floresville, Tex.

WANTS AND EXCHANGES

WANTED.—50 to 200 colonies bees, preferably near home. H. G. Quirin, Bellevue, O.

WANTED.—20 colonies of bees, free from disease. Henry Roorda, 10729 State St., Chicago, Ills.

Our Food Page—Continued from page 221.

cup flour. Beat the egg in the mixing bowl, add the sour milk, then the dry ingredients, adding the other $\frac{1}{4}$ cup of flour if the batter seems too thin. Cornmeal batter should always be much thinner than an all-flour batter as cornmeal should be given room to swell. Add the melted shortening last. Bake in a shallow pan about 45 minutes. It may be baked in muffin pans if preferred. Eat with honey.

FIVE-HOUR METHOD BREAD.

1 compressed yeast cake	1 cup water
soaked in	$1\frac{1}{2}$ teaspoons salt
$\frac{1}{2}$ cup warm water	flour
1 cup milk	

Scald the milk, add the salt, and cool by adding the cup of water cold. When lukewarm, add the yeast and the water in which it has been softened. Add enough flour to make a batter, about one quart, and beat very thoroly. Now add enough more flour or white flour substitute to make a dough, and knead until smooth and elastic. Put in a warm place to rise (about 80 degrees) and when risen divide into loaves, or a loaf and biscuits, and set to rise again. When light, about doubled in bulk, bake.

For making bread dough the rule is one part liquid to three parts flour or more. The

(Continued on Page 253.)

Garden Seeds

ALMOST GIVEN AWAY

\$100 WORTH of the Most Delicious Vegetables Can Easily be Grown From These Seeds



Box Contains 42 varieties best, earliest and most desirable. Vegetables on earth, just what every planter needs and must have: Viz., early, medium and late Beets, butter and head Lettuce, red, pink, and white Radishes, earliest and biggest Tomatoes, mammoth Sugar Parsnips, earliest Sunrise Beans, etc. Also 42 Varieties of the most lovely Flowers — including the wonderful Japanese Giant Morning Glories — direct from Japan; and marvelous Everblooming Petunias — real wonders. ALL above

Vegetables and Flowers, Extra Big Packets — over 8,000 selected Seeds — securely Boxed and mailed to any address for Two Dimes or 24 1c stamps. Six Boxes, \$1.00. Get up a club.

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IRON AGE Potato Planter
solves the labor problem and makes
the best use of high priced seed.
Means \$5 to \$50 extra profit per acre.
Every seed piece in its place
and only one. Saves 1 to 2
bushels seed per acre. Uniform
depth; even spacing. We make
a full line of potato
machinery. Send
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No Doubles
Bateman Mfg Co., Box 20B, Grenloch, N.J.

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FLOWERS ALL SUMMER FOR \$1

There is no flower that is so easily grown and blooms so readily as the Gladioli. The long spikes are graceful and fascinating in their great array of colors; if cut as first flower opens and placed in water, the flowers develop for a week, even to the last bud. Commence sowing in April and repeat at 10-day intervals until end of June, and you will have flowers until late Autumn. Leaflet "How to Grow" included in each order.

"Homewood" Gladioli
75 Fine Bulbs, Many Kinds Mixed
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152-page colored catalogue mailed FREE everywhere.

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41-43 Barclay Street, (Dept. L.) NEW YORK

Spray Your Crops
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9 sizes of sprays from one nozzle. Starts or stops instantly—saves solution and work. *Send for catalog.* Agents wanted.
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IRON AGE Combined Hill and Drill Seeder

306
Drill and Wheel Hoe

solves the garden labor problem. Takes the place of many tools stored in small space. Sows covers, cultivates, weeds, ridges, etc., better than old-time tools. A woman, boy or girl can push it and do a day's hard work in 60 minutes. 30 combinations, \$4.50 to \$30.00. Write for booklet.

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69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines mailed for 10c. Descriptive catalog free. LEWIS ROESCH, Box H, Fredonia, N.Y.

LEPAGE'S GLUE
HANDY TUBES
WILL MEND IT

Our Food Page—Continued from page 251.

substitutes vary so much in absorbing power that it is difficult to give the amount.

OATMEAL MACAROONS.

1 tablespoon melted fat	1 1/2 cups oatmeal
1/4 cup honey	1/4 teaspoon salt
2 tablespoons sugar	1/2 teaspoon baking powder
1 egg	
2 teaspoons almond extract	1 1/2 tablespoons flour

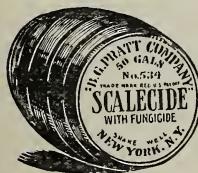
Blend the melted fat, sugar and honey, stir in the egg well beaten and the almond extract. Sift the baking powder and flour together and combine with the other dry ingredients. Drop from teaspoon on oiled baking sheet, and bake in moderate oven about 15 minutes. This recipe should make 25 or more macaroons. You may vary this recipe by substituting 1/2 cup shredded coconut for that much oatmeal and one teaspoon vanilla for the almond extract.

PEACH PUDDING.

1 quart can peaches	1 cup flour
1 teaspoon oleomargarine	3 teaspoons baking powder
1/2 cup mashed potato	1/2 teaspoon salt
1 1/2 tablespoons shortening	milk

Put the peaches in a glass or earthenware pudding dish in the oven to heat thru. If very juicy, it is well to thicken them with a little flour or cornstarch. Cut the shortening into the flour, baking powder, salt and mashed potato with two knives, add enough milk to make a dough which can be handled, roll out and cut into small biscuits. Dot the

(Continued on Page 255.)



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"SCALECIDE"

As proof of our confidence and to strengthen yours, we will make the following proposition to any fruit grower of average honesty and veracity: Divide your orchard in half, no matter how large it is. Spray one half with "SCALECIDE", and the other with Lime-Sulfur for three years, everything else being equal. If at the end of that time, three disinterested fruit growers say that the part sprayed with "SCALECIDE" is not in every way better than that sprayed with Lime-Sulfur, we will return you the money you paid us for the "SCALECIDE".

Send for new free booklet,
"Profits in Fall Spraying".

B. G. Pratt Co., M'f'g Chemists
50 Church St. Dept. 6 New York

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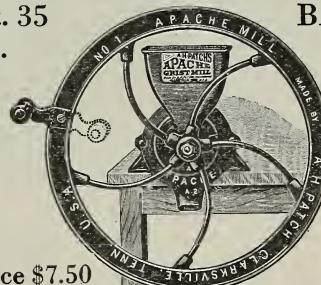
Why not live better and save money, too?

Grind your wheat into Best Whole Wheat or Graham Flour. Your doctor knows how healthy these are. Make the BEST Corn Meal, the old-fashioned sort you can't buy at any price nowadays.

Do all sorts of fine and coarse grinding with an

APACHE MILL

Wt. 35
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Makes Best Corn Meal, Graham Flour, Rye Flour, Chops, Hominy, Cracks Peas, Grinds Coffee, Spices, etc. Perfect adjustment for coarse or fine work. Will send Mill prepaid by Express \$7.50

APACHE GRIST MILL—Largest capacity, fastest grinding, easiest turning handmill. Does more, lasts longer.

A. H. Patch, Inc., Clarksville, Tenn.

The Blackhawk Corn Sheller Inventor
Invented 1885

Beeswax
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Augusta, Kansas

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Manufacturers constantly writing us for patents. List of inventions actually requested and book "How to Obtain Patent" sent free. Send rough sketch for free report regarding patentability. Special assistance given our clients in selling patents. Write for details of interest to every inventor.

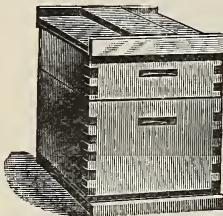
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The season is drawing nearer and beekeepers should endeavor to order early. By making up your wants now you will be better fitted to go into the season with a view of not only obtaining a bigger crop but to facilitate matters thruout the season. If you will make up a list of requirements for quotation we shall be glad to quote.

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where the good beehives come from.

QUEENS THAT WILL PLEASE
OVER 20 YEARS OF CAREFUL SELECTING AND BREEDING

GUARANTEE.

You take no risk in buying my queens, for I guarantee every queen to reach you in first class condition, to be purely mated, and to give perfect satisfaction.

They are bred from IMPORTED stock. The very best for honey gathering and gentleness. They are not given to swarming and are highly resistant to diseases. Give me your order and if after you have given my queens a fair trial, you are not satisfied in every way that they are as good as you have ever used, just return them and I will send you queens to take their places or return your money with any postage you have paid out on returning the queens.

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L. L. FOREHAND - - - FORT DEPOSIT, ALABAMA

Our Food Page—Continued from page 253.

peaches with the oleo, place the biscuits over them and bake in a quick oven. Serve the peaches with the biscuits dipped over them for a sauce.

POTATO PUFFS.
 3 cups riced potatoes 1 teaspoon salt
 about $\frac{1}{2}$ cup milk 1 egg
 2 tablespoons butter sub- grated cheese
 stitute paprika

Heat the milk, melt the butter substitute in it and add to the hot riced potatoes and salt. Beat the egg and add. Make into rounded puffs on a well oiled pan, dust with grated cheese and paprika. These may be prepared at noon and baked for the evening meal.

GOLDEN MARMALADE.
 1 pound evaporated apricots 1 large can shredded
 pineapple
 Honey

Soak the apricots in water to cover four or five hours or over night. In the morning put them thru the food chopper and mix them with the shredded pineapple together with the water in which they were soaked. Measure the pulp, and for every cup allow $\frac{3}{4}$ cup honey. Cook slowly until thick. It is well to cook a small amount at a time. It will cook thick in a very short time.

TAMALE PIE.

2 cups cornmeal	1 onion
6 cups boiling water	2 cups tomatoes
1 tablespoon fat	1 pound ground steak
2 teaspoons salt	

Make a mush by pouring the boiling water slowly over the cornmeal and salt, stirring all the time to avoid lumping. Cook in double boiler about 45 minutes. Brown the onion in the fat, add the ground steak and stir until the red color disappears. Season and add the tomato. Tomato canned with sweet peppers is good for this dish. Grease a baking dish, put in a layer of the mush, add seasoned meat, and cover with the mush. Bake 30 minutes.

All measurements level.

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AROUND THE OFFICE

M.-A.-O.

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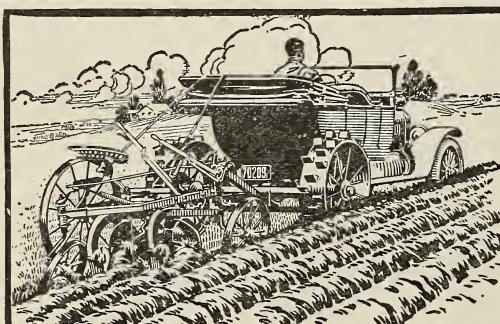
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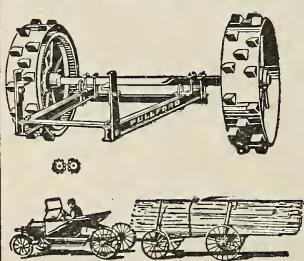
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